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Satellite-Derived Daily Sea Surface Temperature Maps for Areas “E” to “G” from 1984 to 1986
E: Gulf of St. Lawrence to
G: North Atlantic Current

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Rapport statistique canadien sur l'hydrographie et les sciences océaniques

Les rapports statistiques servent de véhicule pour la compilation et la diffusion des données sous une forme directement utilisable par les scientifiques et les techniciens. En général, les rapports contiennent des données brutes ou analysées, mais ne fournissent pas d'interprétation des données. Ces compilations sont préparées le plus souvent à l'appui de travaux liés aux programmes et intérêts du service des Sciences et levés océaniques (SLO) du ministère des Pêches et des Océans.

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Les établissements des Sciences et levés océaniques dans les régions et à l'administration centrale ont cessé de publier leurs diverses séries de rapports en décembre 1981. Une liste complète de ces publications figure dans le volume 39, Index des publications 1982, du *Journal canadien des sciences halieutiques et aquatiques*. La série actuelle a commencé avec la publication du rapport numéro 1 en janvier 1982.

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August 1990

SATELLITE DERIVED DAILY SEA SURFACE TEMPERATURE MAPS FOR AREAS "E" TO "G" FROM 1984 to 1986

E: GULF OF ST. LAWRENCE
to
G: NORTH ATLANTIC CURRENT

by

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ABSTRACT

Topliss B.J., L. Payzant, C.S. Mason, H. Edel, K.L. March, I.G. Holden, M. Thiebaux, and F. Guptill. 1990. Satellite Derived Daily Sea Surface Temperature Maps for Areas "E" to "G" from 1984 to 1986. E: Gulf of St. Lawrence to G: North Atlantic Current. Can. Data Rep. Hydrogr. Ocean Sci. No. 86: vi + 112 pp.

Satellite imagery from the NOAA series have been used to produce daily sea surface temperature (SST) maps for specific areas off the east coast of Canada. Each temperature map is accompanied by a visible wavelength map which can be used for basic cloud discrimination. Details of the processing steps for turning a satellite infrared image into a SST map are given together with scientific and applications limitations resulting from the processing choices made at each step. Details on how to access and use the atlas are also given. Each regional atlas is intended to serve as both a quicklook of available data and as a prototype or pilot atlas to assess regional demands and specifications. The images or maps themselves can only be viewed with the aid of a computer. Catalogues for the images are presented here which cover such items as the quality of the navigation of each image/map, and the degree of cloud cover as well as the location of a specific map within the archiving system. The catalogues are also available on a VAX computer system for electronic access.

RÉSUMÉ

Topliss B.J., L. Payzant, C.S. Mason, H. Edel, K.L. March, I.G. Holden, M. Thiebaux, and F. Guptill. 1990. Satellite Derived Daily Sea Surface Temperature Maps for Areas "E" to "G" from 1984 to 1986. E: Gulf of St. Lawrence to G: North Atlantic Current. Can. Data Rep. Hydrogr. Ocean Sci. No. 86: vi + 112 pp.

Une imagerie satellitaire provenant de la série de la NOAA a été utilisée pour produire quotidiennement des cartes de la température de la mer en surface (TMS) dans certaines zones situées au large des côtes est du Canada. Chacune des cartes de la température s'accompagne d'une carte des longueurs d'onde du visible pouvant servir à la différenciation des nuages fondamentaux. Certains détails sont donnés ici concernant les phases de traitement permettant de transformer une photo-satellite infrarouge en une carte de la TMS; sont aussi précisées les limites scientifiques et pratiques résultant des choix de traitement faits à chacune des étapes. On trouve de plus des détails sur la façon d'accéder à l'atlas et la manière de s'en servir. Chacun des atlas régionaux est destiné à servir à la fois d'aperçu rapide des données accessibles et d'atlas à l'état de prototype ou expérimental pour évaluer les spécifications et les besoins régionaux. Les images ou les cartes comme telles ne peuvent être examinées qu'à l'aide d'un ordinateur. Des catalogues montrant les images en question sont présentés ici et ils portent sur des paramètres comme la qualité de la navigation avec chacune des images par rapport à la carte, ainsi que le degré de couverture nuageuse de même que le lieu d'une carte donnée au sein du système d'archivage. Les catalogues sont aussi accessibles à l'aide d'un ordinateur VAX pour accès électronique.

TABLE OF CONTENTS

Page

Abstract/Resume iii

List of Tables vi

List of Figures vi

Introduction 1

The Raw Data Archive 2

The Quicklook Archive 2

Atlas Creation 4

Atlas Processing 4
- Ingest and Navigation 5
- Batch Processing: Sectors and Visible Images 6
- Batch Processing: Temperature Algorithm 7
- Batch Processing: Map Projection 9
- Graphics Overlays 10
- Quality Control 11

Calibrations and Processing Errors 12

Catalogues and Tape Inventories 13

Access to Catalogues and Atlas 14

Summary 15

Acknowledgements 16

References 17

Disclaimer and further contacts 21

Appendix 1: Catalogue of Daily SST and Visible Images in Area E for years 1984, 1985 and 1986 35

Appendix 2: Catalogue of Daily SST and Visible Images Area F for years 1984, 1985 and 1986 61

Appendix 3: Catalogue of Daily SST and Visible Images Area G for years 1984, 1985 and 1986 87

LIST OF TABLES

1 Catalogue Names and Area Co-ordinates 23
2 Navigation Error codes 24

LIST OF FIGURES

(NOTE: Figures are only applicable to the hardcopy version of this report. No figures appear in the reports available in digital (magnetic tape) media which appear as the first digital file on the first volume of each regional atlas tape.)

1 Conversion values for NOAA 7 data (10 to 8 bit) 25
2 Conversion values for NOAA 9 data (10 to 8 bit) 26
3 East Coast of Canada Satellite pass: Coverage 27
4 Geographic Atlas Areas 28
5 Atlas Processing Record (APR) example logsheet 29
6 Graphics overlay; combined coastline, grid and bathymetry (as applicable): Area E 30
7 Graphics overlay; combined coastline, grid and bathymetry (as applicable): Area F 31
8 Graphics overlay; combined coastline, grid and bathymetry (as applicable): Area G 32

INTRODUCTION

Sea Surface Temperature (SST) has been used in both marine and fisheries research off the east coast of Canada for numerous decades (Hachey 1935, 1937). There are a variety of uses for SST information from high precision accuracy measurements for air-sea interaction and heat flux calculations (Isemer and Hasse 1985), to the use of statistical means and annual anomalies for environmental and fisheries studies (Sutcliffe et al 1977, Drinkwater and Myers 1987), to the simple location and monitoring of thermal frontal regions in the ocean (Legeckis 1979). Historic SST information has generally come from various marine sources, such as research vessels, commercial ships of opportunity and military vessels. Regional and monthly composites of the available data are then performed and atlases such as those produced by ICES (1962) are the common end product. Such historic data are, however, largely confined to the world's shipping lanes with either sparse or no coverage for some parts of the world. With the advent of satellite measurements of SST, both real time and large scale global coverage (Woods 1983) becomes possible. The National Oceanographic and Atmospheric Agency (NOAA) have combined ship of opportunity measurements with satellite ocean enhanced photographs to produce weekly analysis charts for the Eastern Seaboard of the United States including some sections off Atlantic Canada. These charts can be transmitted directly to vessels wishing to identify the characteristics of the Gulf Stream for either commercial or sporting activities. They can also be obtained by subscription by research and educational establishments and used in futher analysis of fisheries studies (Campana and Hurley 1989). Similar charts also exist for the west coast of the United States (Montgomery, 1981) and oceanographic interpretations of the NOAA Atlantic Canada charts are published routinely as a State of the Ocean's report in the "Sou'wester" magazine.

The prime source of satellite SST coverage are the NOAA (and TIROS) series of satellites (see Maul 1985 for details of individual launch sequences since 1960). The sensors used since NOAA5 are the AVHRR (Advanced Very High Resolution Radiometer) and the AVHRR/2 (with an extra band in the infrared) operating in a polar, sun synchronous orbit at an approximate height of 850km with a nadir geometric resolution of approximately 1.1 km. The waveband details of both the AVHRR and the AVHRR/2 are given in Robinson (1985), although in many references the /2 notation is dropped so that the term AVHRR now tends to refer to the currrent generation/model of the sensor.

Data from the NOAA series of satellites are received in Canada by the Atmospheric Environment Service (AES) and the Department of Energy Mines and Resources, Canada Centre for Remote Sensing. For coverage of the east coast of Canada, the satellite data are received at AES, Downsview outside Toronto, Ontario. This information is largely used by AES for real time weather prediction and by Ice Central, Ottawa, for supplementing ice conditions in northern latitudes. The information is generally not archived since analysis of historic marine data is not part of AES's mandate. Since early 1984, collaborative scientific research programmes have existed between AES Bedford, Nova Scotia and the Department of Fisheries and Oceans, Bedford Institute of Oceanography. This collaboration has now covered several joint Meteorological - Oceanography programmes such as the Shelf Break Programme (1976-78), the South-West Nova Scotia Programme (1978-83), Oceanographic Analysis of Sea Ice and Icebergs (1985-89), CASP (Canadian Atlantic Storms Programme 1985-86), Atlantic Ocean Currents from Satellite (1989-94), and planned Sea Ice Flux onto Newfoundland Shelves (1990-94), and CASP -II (1990- 93). As part of this collaboration AES, Bedford have received daily NOAA satellite imagery of the east coast from the main Downsview facility. These tapes are first catalogued at BIO and then stored at a local Federal Government tape repository in Burnside, Dartmouth. From the initiation of this collaborative programme in 1984 until approximately November 1988, the Downsview receiving station was only able to receive data in 8 bit format even though the satellite sensor transmitted down 10 bit information. Hence, although it is possible to note the published precision and accuracy of satellite derived temperatures (Robinson 1985), the errors associated with the satellite temperatures presented in these atlases will be larger. It is expected however that the values will still be within the values of accuracy of 1 deg C and precision of 0.5 deg C determined by Robinson and Ward (1989) for the north-east Atlantic.

THE RAW DATA ARCHIVE

Only one NOAA pass per day is dumped to magnetic tape in Downsview. Since some of the data was to be used for monitoring water currents and ice movement off the Labrador coast (atlas areas I and F) this would require the use of visible as well as thermal channels from the sensor, so the daytime pass was selected for preservation. Due to the relatively high latitudes of some of the areas covered by the Downsview receiving station, the quantity/quality of daylight coverage for these areas was improved by selecting the afternoon pass. Hence the vast majority of the existing archive consists of daily passes of the afternoon orbit (only 18 night passes were archived during 1984-1986). This means that the archived data are generally NOT suitable for studying consecutive diurnal or day - night changes in surface temperatures (but see Ikeda 1989) or for short term (6 or 12 hour) velocity calculations from consecutive passes. No assessment of the data is made prior to recording by Downsview; the one pass per day coverage is maintained whether any given area is cloud free or whether the entire pass is cloudy. The eventual application and use of the archived data is left with the end user. All (one pass per day) data are preserved unless technical faults at the receiving station have prevented this. Conversely as far as Canadian east coast users are concerned if the data they need are not in this archive there is a very realistic probability that they do not exist in Canada and users should consult the U.S satellite data agencies such as EDIS (Environmental Data Inventory Service). For purely oceanographic research applications users might also contact the Oceanography Departments at the University of Rhode Island and at the University of Miami both of whom maintain infrared satellite archives of marine areas.

The main applications for the (AES/BIO) archived satellite data are research process orientated studies for time-series analysis. With a great deal of cloud cover occurring off the east coast of Canada, minimal use has been made of real time reception and transmission to ships of either raw satellite imagery or satellite derived SST. Hence the data acquisition arrangement with AES is for historic, not real time data. This data stream therefore would NOT be useful for any real time applications. The data arrive at BIO in batches of 2 to 4 months of data generally between 3 to 6 months after satellite transmission. This delay also allows AES to access the stored tapes for short term and individual requests within the region. At BIO each tape is given an internal tape identification number of the form IAxxxx. This number alone is used for storing and retrieval of the tapes in the local tape repository. Since the pre-November 1988 data from Downsview are recorded in 8 bit format, but transmitted from the satellite in 10 bit format, the data have been processed by AES through a look-up table for conversion. These look-up tables are different for each satellite and for the individual channels on the satellite. When using software which expects the NOAA data to be in 10-bit form (e.g. as with the University of Miami software), it is necessary to reprocess the data through the inverse look-up tables. The AES look-up tables for each channel of NOAA 7 and NOAA 9 are displayed in Figures 1 and 2. [For display and enhancement with image processing routines working with an 8 bit data format such an inverse procedure would not be required.] For detailed information on the pre-November 1988 AES tape format see the relevant internal AES document available on request from the Satellite Data Acquisition Division at AES, Downsview (or contact IAS centre at BIO).

THE QUICKLOOK ARCHIVE

Each IAxxxx tape contains a section of a satellite orbit for the east coast of Canada (Figure 3). The quantity of north-south coverage on a particular tape has varied with time. Each pass is recorded on a single 1600 bpi magnetic tape; 6250 bpi tapes are used since 1988. The afternoon pass is an ascending orbit which means that reception by the Downsview station starts as far down as the southern states of the U.S.A. and reception finishes approximately below the Arctic circle in central Baffin Bay (atlas area **K**, see Figure 4). Hence these archived satellite data are NOT suitable for Arctic studies and potential users for that area should contact CCRS (for data from their west coast receiving station) or the U.S.A. (for data from their Alaska receiving station). The raw archived tapes contain approximately 3,000 scan lines and hence cover approximately 3000 + kilometres. The data length on tapes has been arranged to give maximum Canadian coverage and to finish at the limit of Downsview's reception in the north. The start location of data reception is adjusted to achieve maximum Canadian coverage on ONE 1600 bpi data tape and the start location is generally in the Boston to New York area (atlas area **A**). The length of data on a tape has increased with time and by the end of 1986 had increased to approximately 4,000 scan lines. Since the afternoon pass will progress eastward each day, the horizontal extent of the data coverage will change with time (Figure 3). Data coverage starts so as to cover the Canadian east coast ocean areas of interest such as the Gulf of Maine (atlas area **A**) and the Gulf of St. Lawrence (atlas area **E**). Occasionally the orbital path takes in parts of Hudson Bay (atlas area **N** for the northern section and atlas area **M** for the southern section) and James Bay (atlas area **M**). However these latter two areas are on the edge of the east coast target area and so the atlases only represent limited coverage; the Downsview receiving station can cover these areas more frequently. Potential users for this location will need to search other data archives for fuller coverage. The eastern limits of this archive correspond to the eastern receiving limits of the Downsview station, which touches on parts of eastern Greenland (atlas areas **L** and **J**) and the North Atlantic Ocean immediately south of Greenland (atlas areas **G** and **D**). These areas are on the outer limit of the target area and coverage by this archive is by no means complete. The eastern limit of the Downsview receiving station just overlaps with the western limits of the satellite receiving facilities at the University of Dundee, Scotland, United Kingdom. Potential users of NOAA imagery for this central northern area of the North Atlantic should access the Scottish and main U.S.A. archives.

(NOTE: Data from any of these other receiving stations will probably be in 10 bit format and in different tape formats).

Since the raw data cover different geographical areas on each day a quicklook is needed to help users identify their area of interest and also to identify the quantity of cloud cover (or lack of it, depending on the application). A compressed overview of each tape is produced on a 35mm photographic slide medium by a contractor using the false colour enhancement routines in the EASI/PACE software package of PCI Ltd. This software is used for the quicklook task since it possesses the capability of loading an image (for display, decimation, enhancement and annotation) directly from tape to display without first having to store the image on disc. Two quicklook slides are produced for every IA tape; first a false colour composite of one visible and two infrared channels and second a black and white shot of the 11 micron infrared channel. Preselected seasonally adjusted contrast stretching routines are used to produce the false colour composite image. The colour contrast selected helps visual identification of land, open water, ice and cloud cover. The single black and white slide is also produced with a seasonal contrast stretching routine which helps to identify potential thermal features in the water. These slides are stored in chronological order in slide carousels for viewing at the BIO Image Analysis facility. As yet no additional quicklooks are available for external distribution.

The alternative means of determining what data are in the IA tape archive is from a listing of holdings. Facilities operating the University of Miami software with the University of Rhode Island data cataloguing programmes will be able to call INVREAD (Inventory Read). This provides a list of the satellite tapes which have been "ingested" through University of Miami procedures. The information contained in this list gives: satellite identifier (e.g. NOAA7), data type (usually LAC for local area coverage), the year and julian day, the time in GMT of the first recorded scan line, the orbit number, the number of scan lines on tape, the number of missing lines (usually 0), a file number (usually 1), the internal (BIO) tape identifier number and finally the first date of ingest for that tape together with a project or user identifier. This data holding list has been attached as an appendix to the atlas for areas **O** and **P**. The list shows that data coverage starts on January 25th 1984 and that the vast majority of data held is from the NOAA 7 and 9 satellites with just 5 passes from NOAA 8 and 33 from NOAA6 up to the end of 1986. The change over between NOAA 7 and 9 occurred in early January 1985. There is no indication from these lists of the quality of the data for a specific application (degree of cloud cover etc) and the east-west coverage of an individual pass can only be inferred from the start scan time. (Since the satellite is sun synchronous it passes over the same location on the globe at approximately the same local time with a slight east-west progression in the start times).

ATLAS CREATION : CONCEPTS

The raw archived satellite data between 1984 and 1986 have been processed into 14 regional and 2 overview atlases of SST. Each one of these areas comprises a three year digital (magnetic tape) atlas. The rationale behind the creation of the atlases dictates many of the processing choices which have been made. The concept behind the atlas creation was to enable the satellite imagery to be distributed as a "quicklook" and to be evaluated as widely as possible by non imagery specialists. Since the processed satellite data still remain in digital format they still have to be analysed by means of an image processing system, but the level of sophistication of required systems can be minimised with adequately pre-processed imagery. The final imagery therefore will be calibrated SST maps which are independent of the specific satellite sensor and should be capable of being displayed on even a simple PC based image system (with appropriate data format reads). The first decision is that NO data will be discarded so that all of the raw data will be placed into one of the areas even though this will result in some of the "edge" areas having temperature non-linearities due to scan angle effects and such areas will not have very comprehensive coverage; the second is that all the areas will be covered at full spatial resolution, that is without decimation. Individual users may later chose to disregard data, to decimate areas, or average data for statistics, but that decision rests with the end user. The full spatial resolution decision dictates the maximum size of an individual area for the BIO processing system to be 1024 by 1024 pixels, which in turn resulted in mapping the east coast into 14 areas or atlases. The details for each area are given in Table 1. For the hardcopy version of this report (as opposed to the digital version on the magnetic tape header file of each atlas) the physical limits of these areas are shown in Figure 4. The atlases are arranged mainly in horizontal sequence. A very simple final mapping projection was chosen having straight parallel lines of latitude and longitude. Although this seems a very primitive form of projection, it is most suited to the simplest form of image processing which sees images as simple arrays. It also allows basic image processing decimation routines to be used to join adjacent atlases, all with a minimal knowledge of co-ordinate systems and projections. The images can easily be remapped into any (e.g. Mercator) co-ordinates by users, especially those already operating University of Miami systems. Some overlap between the atlases has also been allowed. This is more from logistics based on local knowledge of oceanographic studies and is aimed to minimise the number of atlases individual projects have to access. Inevitably there will be some studies which are forced to look at more than one atlas even for relatively small regions such as the Bay of Fundy. [Some of the outer areas have poor coverage so on the basis of probable infrequent access/users and to minimise report costs areas have been combined into five reports as indicated in Table 1.]

ATLAS PROCESSING

The processing of AVHRR satellite images into SST maps was completed with the University of Miami DSP software version August 1988 on VMS version 4.7. The main steps to process large quantities of images are:

1. Ingest and Navigation.
2. Batch processing for atmospheric correction.
3 Remapping into regional areas.
4. Quality assessment and catalogue production.

The University of Miami software has been developed by oceanographic research workers specifically for dealing with imagery collected over the oceans (Cornillon et al 1985). This results in several conceptual differences/approaches in the software as compared with systems developed for land based imagery. The input data for the NOAA/AVHRR are usually a large section of a satellite orbit not a pre-defined segment of data as for Landsat data. By working with all or most of a pass from a receiving station, the probability of finding some cloud free, near nadir area is greatly improved. This area is then used to produce navigation corrections, which in turn are applied to the whole pass so that ocean areas, or coastal areas with cloud covered land can be accurately navigated. For this atlas an entire pass from the Downsview receiving station is loaded to disc. This raw image is navigated and then an atmospheric correction applied to the entire pass. This huge temperature map is then remapped into the 14 regional and 2 overview segments by creating 16 individual transformation matrices. [There is insufficient computer memory to allow the full pass to be transformed and then broken up into regions]. The same 16 transformation matrices are also applied to the accompanying "huge" visible image. Since each daily pass covers a different area, the transformation matrices have to be re-calculated for each pass.

Ingest and Navigation

The raw IA tapes have to be "ingested" into the system. This places the entire pass onto disc and also, for a first ingest of the tape, updates the raw data holding inventory (accessed by INVREAD see U. of Miami Manuals). The pass is automatically named by the software using Year, Julian Day, first scan time in GMT (ZT) and an extension indicating the satellite type. This automatic naming convention is maintained throughout all processing stages so that the information in the raw data holdings (given as an appendix in the report for areas **O** and **P**) can be used to trace or locate any of the intermediate files and can be cross-checked against the final catalogues and tape indexes/directories for the processed images.

EXAMPLE OF AUTOMATED FILE NAMING CONVENTION:

Inventory entry: NOA7 LAC 1984/070 17:54:01
Ingest entry: 84070175401.NO7
Sector entry: M84070175401x.smg
(M -NOAA7, N -NOAA6, L -NOAA8, K -NOAA9); (x -A to O atlas areas).
Atmospheric entry: M84070175401x.fmg
Remap & atlas entry: 84070175401.RMx (M -SST map)
84070175401.RVx (V -visible map)

Satellite information needs to be registered to a co-ordinate system. For land based applications the registration of an image is undertaken against a land map showing features such as roads and rivers (Drury, 1987). The process of making the image fit the map is achieved with "ground control points". These locations are chosen because of their easy identification (intersection of major road systems etc.) and they need to be distributed evenly on all sides of the image. With ocean applications there is immediately a problem: there are few static identifiers to mark an ocean area and coastlines, by their definition, tend to occur on one side of an image only. This means that ocean images require different registration procedures than images for land based applications. The University of Miami software uses a registration approach based on the correction of the satellite ephemeris data. "Navigation" is the term given by Miami for relating the satellite data to a latitude and longitude co-ordinate system. (For specific details of the navigation algorithms the reader should contact the University of Miami.) After navigation, however, the imagery will still look distorted and is not in any specific mapped co-ordinate system, the software simply "knows" where the satellite was for that particular orbit number and can hence relate the image to earth co-ordinates. "Ocean Navigation" is conducted in a similar manner to some land based navigation schemes. The coastline is drawn (from the CIA World Database Coastline) on a graphics plane over the image; a section of the satellite pass close to nadir (centre) is identified and redrawn; under magnification the chosen section of coastline is moved around (up/down, left/right) by the operator on the graphics plane until the best fit between the imagery coast and the database coastline is obtained. The software then works out ROLL, PITCH and TIME corrections to apply to the satellite ephemeris data already stored in a database within the University of Miami software. The navigated image is then assessed as an entire pass by the operator to see if the edges/corners of the image are also correct or warrant a YAW correction. All the navigation "corrections" are stored in a further database DBMAN (U. of Miami manuals for access and operation). This means that once a satellite pass has been navigated correctly there should be no further need to re-navigate that pass regardless of the users geographic sub-area of interest. All further analyses will access the navigation corrections for that orbit as stored in the DBMAN database. Conversely since the database only stores one set of corrections per orbit/satellite NO UNAUTHORISED NAVIGATIONS of the raw archived NOAA imagery should be conducted by any user on the BIO system; to do so would replace and hence destroy the established navigation corrections. This cautionary note does not apply to those users who intend to process the finished atlas data or to process the raw data on external sites. Since a database of navigation corrections has been established it is necessary to understand its limitations with regard to processing the atlas data. The raw data will still be distorted but after further processing of the data (still to be described) the images can be displayed on a single mapping projection. This means that all the images within a given regional atlas should, theoretically, overlay each other exactly. In practice, this will not happen and deviations may result from a number of causes. The imagery coastline and the World Database coastline may not match because of flaws in the database coastline itself (version used is July 1987, North American portion) or because areas of image coastline are tidal (e.g Ungava Bay or the Bay of Fundy) or have seasonal ice attached to them so masking the true coastline. Other mismatches between images will arise because of inaccuracies in the chosen navigation. For a very small number of images the navigation corrections procedure will not be valid for the entire pass if the satellite orbital characteristics were changing such as during degassing. The quality of the navigation for a given atlas area will be partly dependent on the distance of that area from the navigation centre; the further the area is from the satellite nadir the more likely inaccuracies will occur. When each satellite pass was navigated any problems arising in the navigation were logged in an navigation error text file NAVERR, the codes indicating the range of problems are given in Table 2. The full error text is added as an appendix to the atlas for areas O and P. During processing of the atlases from the raw data to the finished SST stage, a log sheet (Atlas Processing Record -APR see Figure 5) was maintained by the technical contract staff. Quality control information was entered onto these sheets together with the area used for navigation and a navigation quality code. These values were later entered into the catalogues for each area. Hardcopy versions of the APR records are available for research users only at the BIO Image Analysis Facility site. In the case of an image in a regional atlas having an offset with respect to a time series of other SST images then the land based methods of "rubber stretching" one image to match a "standard" image can be applied. In the case of images which have no land in the regional atlas there is no method of assessing the accuracy of individual images or ocean features. In that case it is wise to regard any large movement of ocean features as potentially incorporating some navigation error; the probability of a given image being in error could still be related to a combination of distance from nadir and the navigation quality code.

Batch Processing: Sectors and Visible Images

After the raw tapes have been navigated and the DBMAN database checked for an entry the images can be converted into radiometric units. Details of the processing commands are given in the University of Miami manuals. This stage of the processing is called "sectorising" because, for the individual research image (as opposed to the mass production of images for an atlas), this is the stage where a "sector" of the raw data is extracted for analysis. The raw data consist of digital counts which must be converted to radiometric units: albedo, in percent, for the visible channels; and radiance, in mw/m^2 for the infrared channels. The appropriate calibration equations are produced by NASA/NOAA (Lauritson et al 1979). It was found by Brown et al (1985) that it was necessary to consider the internal operating temperature of the sensor in order to produce radiometric calibrations at the ±0.2 deg C level. This atlas used the NASA/NOAA look-up tables for radiometric calculation.

The AVHRR sensor has several channels operating at different wavelengths. Two of these channels are situated in the visible portion of the electromagnetic spectrum (from 580 to 680nm and 725 to 1,100nm) and give wide band views of the land/ice/ocean interfaces. The remaining channels are situated in the infrared region of the electromagnetic spectrum and are slightly different between the odd and even numbered NOAA systems (see Maul 1985, Robinson 1985). The visible channel is useful in interpreting ocean imagery for at least two applications: clouds and ice. The SST algorithm described below will empirically convert the satellite signals into sea surface temperatures. The algorithm will do this for any pixel value regardless of whether that value is truly ocean water or not. Numerous schemes have been investigated for determing and classifying cloud cover (e.g. Coakley and Bretherton 1982, Crosby and Glasser 1978, Hunt 1973, and Saunders et al 1982) which may then allow users to mask out data not to be converted to a SST. Most schemes utilise the visible band so that night imagery requires alternative schemes. With night imagery more than one SST algorithm is used and if the predicted SST's do not fall within certain limits then the data are assumed to be contaminated (McClain et al 1985). The U of M algorithm allocates an opaque cloud a value of SST; a standard of zero degrees is usually used since this value is not mistaken for anything other than a cloud in warm ocean areas. For Canadian waters, where the temperature of seawater can reach as low as -1.8 deg C, and in particular for the regional atlases, the cloud limit or first order cloud discriminator has been set at -3 deg C. However since not all clouds are completely opaque, but are thin enough to allow some transmission, these will give FALSE SST values. In general such false temperatures are seen as cool patches and sometimes may be easily identified in the thermal imagery. As a means of assisting the true interpretation of the imagery, each fully processed SST image is accompanied on the digital (magnetic) tape by the corresponding mapped region from a visible channel (2) of the AVHRR sensor. Displaying the visible image (often in a grey scale) in sequence with the temperature image provides a quick method of identifying thin cloud regions. Features such as thin clouds extending off the coast over the ocean can help to identify "anomalous" ocean patches as contaminated SST data which will have to be discarded. Use of simple and fairly standard density slicing routines (usually available as part of any simple Image Processing package) on the visible image can produce "masks" to blank out these contaminated data areas in the thermal imagery. The second application for the visible channel, in Canadian waters, is similarly to blank out ice contaminated data from the thermal imagery. Some ice related information may be retrieved from either the single visible band or from the visible/thermal pair of images, but in general this set of SST atlases are NOT directly applicable to the remote sensing of ice conditions and movement. Such applications tend to make more use of the individual spectral bands (Petersen 1987). The information on navigation, mapping, quality control and catalogue entry all apply equally well to the final visible map as to the thermal map.

Batch Processing: Temperature Algorithm

The application of a SST algorithm to the infrared channels is also referred to as an atmospheric correction. This is because present satellite sensors have infrared channels (3, 4 and 5 on the AVHRR) situated in atmospheric windows which allow slightly differing quantities of radiation to pass through them and this feature can be used to eliminate, or at least minimise, atmospheric effects. The IR radiance received by the satellite depends on the atmospheric temperature profile as well as the distribution of water vapour, carbon dioxide and ozone in the atmosphere. Hence the NOAA satellites provide information to the meterologists which is undesirable noise to the oceanographers. Early SST algorithm work concentrated on parameterising atmospheric effects as a bulk correction to SST estimates. Anding and Kauth (1970, 1972), Maul and Sidran (1972), Prabhakara et al (1974) and McMillan (1975) all used linear relationship between water vapour attenuation (Bignell 1970) and the apparent temperature in particular infrared bands. Atmospheric models (Deschamps and Phulphin 1980, McMillan and Crosby 1984, Barton 1983, 1985) helped provide a further theoretical basis behind multiple-window algorithms. Comparisons with sea surface measurements were good (Tabata and Gower 1980, Bernstein 1982) but more detailed work soon found the need for a temperature-dependent bias correction (McClain 1981, McClain et al 1983, Strong and McClain 1984).

The quantity of reflected solar radiation also varies among these different windows and varies with the time of the satellite overpass. There is no reflected solar radiation at night and so different temperature or atmospheric correction algorithms are used for day and night passes. In general channel 3 (3.7 microns), which contains the largest contribution from reflected solar radiation, is not used in day time algorithms. For the odd numbered series of satellites (7,9 etc) this means that channels 4 and 5 are used in the SST calculations. Since the even numbered series (6,8 etc) have no channel 5, a 3,4 algorithm is applied, but has a low level of reliability. Very few images in this archive are from NOAA 6 and 8 and their correct use is anticipated only in tracking ocean surface features etc., and not in combination cr composition with images from the odd numbered sensors. For the NOAA-7 satellite the global 2-channel day (and night) algorithms from McClain et al 1983 were used and for NOAA-9 the algorithms from McClain et al 1985 were selected (but see Calibration section). A master computer file is normally made up for batch processing which guides the imagery through the appropriate processing routines. The satellite type is taken automatically from the satellite pass (IA tape) so that no human intervention is required to identify and direct each satellite type through the processing stages; for example automatic reading of the orbital time of day will dictate whether a night or day processing algorithm is performed.

Although numerous satellite algorithms have been determined and sucessfully tested against SST in-situ measurements (Strong and McClain 1984, Njoku 1985, Pearce et al 1989, Robinson and Ward 1989), not many of the algorithms have been validated at the cold end of the temperature scale (-2 deg C to + 5 deg C). Most satellite algorithms are verified by statistical methods with the best results obtained for large dynamic ranges in temperature, so that many algorithms have been more globally (or basin) than regionally orientated. In some cases regional atmospheric algorithms may be required to cope with specific atmospheric conditions (desert dust clouds, chinook winds, volcanic eruptions etc.). Given that the raw archived satellite data have already been clipped into 8 bit format, this data stream may not be optimal to distinguish between published SST algorithms.

The default algorithm used throughout the atlases was the GLOBAL two channel SST algorithms originally derived from NOAA buoy-satellite comparisons and given in McClain et al 1985. These algorithms are valid for a range of scan angles up to approximately 50 degrees. Several studies have noted large temperature deviations/predictions at large scan angles and some correction schemes have been devised (Maul 1983, LLewellyn-Jones et al 1984, Cornillon et al 1987). Robinson and Ward (1989) recommended that even after correction, data outside ±900 pixels from nadir should not be used. The McClain et al (1985) algorithm would be valid for approximately upto ±750 pixels from nadir. (Maximum data extent is 1024 pixels from nadir). The scan angle effect is still subject to further research and although several algorithms (corrections) have been devised for NOAA-7, few (at time of atlas production) were known for NOAA-9 imagery. In the future new satellite sensors (e.g. ATSR Along Tracking Scanning Radiometer) are being devised to sample the atmosphere through more than one look angle (Harries et al 1983) in order to eliminate/minimise atmospheric effects. For the current users this atlas has lost access to the scan angle/nadir information except by deduction or visually from Atlas **O**. This overview atlas (**O**) is presented on an 11:1 decimation so that all passes can be observed on the same 512 by 512 display and projection; this should allow users to overlay their atlas area co-ordinates and determine approximate pixel values. As with cloud contamination, the most likely scenario for an edge image is rejection from a numerical time-series analysis but inclusion for feature identification. If Atlas area **O** has not been acquired the user can deduce some scan angle information from each catalogue. If a 1024 by 1024 area has not been filled then it must contain the edge of the satellite pass (remember all data have been preserved and there are no remap clippings - see next section). The progression of an atlas area towards or away from nadir can also be approximated from the catalogue information. The lower temperature limit for all the atlases was set at -2.5 deg C with an upper limit of 27.5 deg C and a temperature resolution of 0.125 deg C. Both the upper and lower limit may occassionally be exceeded: the upper limit simply by the presence of very warm (e.g. Gulf Stream) water; and the lower limit because of possible non-linearities in the temperature radiation relationship or increased inability to eliminate subpixel cloud/ice contamination at very low temperatures. In general both these occurrences and the geographical area affected should be minimal. The fixed temperature range and resolution for all atlas areas was chosen as part of the initial objective of producing the simplest data set to work with on all levels and types of image processing systems (but see Calibration section).

There are many restrictions on the accurate interpretation of satellite derived temperatures. Most of these limitations are connected with the physics of monitoring infrared radiation. Oceanographers work within the 3-dimensional domain of the ocean (Robinson 1985). Surface measurements by oceanographers generally mean a temperature taken from anywhere from the top 5 metres of the ocean. These values have been obtained (1) by ships of opportunity either from traditional bucket samples or from engine intake pipes as the ship is underway or (2) from station measurements employing CTD (Conductivity /Temperature/Depth) profiling devices. The satellite however "sees" only the top few millimetres of the water column or the "skin" of the ocean (Paulson and Simpson 1981). Such a thin layer is often dramatically effected by changes in the air-sea interface (Robinson et al 1984). Strong solar heating in calm weather can produce a distinctive diurnal rise in the skin temperature which may result in apparent mismatches between satellite and ocean collected data. This diurnal heating can sometimes be detected by comparison between consecutive day-night passes (Robinson 1985). Conversely Stramma et al (1986) used in-situ and carefully extracted satellite derived SST data to examine diurnal warming events of more than 1 deg C, exceeding on occasion 300,000 km^2, for depths up to 1 to 2m. They noted that estimates of long term SST fluctuations have to take into consideration the time of the satellite pass as part of the computation. For this (AES/BIO) data archive of afternoon passes such day-night comparative checks will not be possible and users should be wary of short, sudden or local increases in surface temperature, especially if linked to periods of calm sunny weather. Although this skin temperature problem appears to make the use of daytime imagery less desirable, the use of night time imagery also has its own problems. The channel specifically designed for optimum night work is channel 3 (approximately 3.7 microns) and this channel has had persistent design flaws (Warren 1989) which appear about 3 to 6 months after satellite launch. The data are sometimes useable but often have a herring bone pattern (Warren 1989) superimposed on the image. Conversely some areas off the east coast of Canada are noted for fog cover which can often be quickly detected with day time visible imagery. Hence although there may be additional or unwanted variability occurring in day time imagery there are limitations and restrictions on using any form of satellite derived SST maps. The end users of the atlases must be familiar with the most likely sources of errors or anomalies for their own study areas.

Batch Processing: Map Projection

Although the projection of images into a given co-ordinate system has already been mentioned several times, it is in fact the last stage in the batch processing sequence. After application of the atmospheric correction/temperature algorithm the images are still in the distorted projection as seen by the individual satellite orbits. The University of Miami software has stored the navigation corrections for each orbit and so "knows" where that image is in terms of earth latitude and longitude co-ordinates. Within the U of M framework it is possible to draw coastlines and grids, place bathymetry contours, extract ocean station data and in general work with the images within their individual distortions. Since in effect the image is already mapped, the next stage is referred to by Miami software as "remapping". Research users may chose to remap by performing transformations into a specific map projection if they wish to observe changes between images or wish to produce a polished product for publication or display. Once outside the framework of the U of M system however the images can only be compared if they have all been transformed onto a common projection. Most land projection-mapping routines clip off the edges of an image in the new projection because a fixed array of data will not have sufficient area coverage to provide data for all elements in a new projection. Miami software avoids this "clipping" phenomenon since by working with the entire satellite pass it can process larger quantities of data from the start. For example, if a user chooses a 1024 by 1024 image as a desired output map size, the sectorising routine can be set up to take a 2048 by 2048 section of data out of the satellite pass. This larger working size is passed down through all the processing stages (atmospheric correction etc.) until it reaches the remapping routine. At that stage the routine has enough data to fill all the data elements for most of the 28 available remapping procedures (see U. of Miami manuals for details).

The main exceptions to this rule are for border areas of an individual pass for which there is not enough data from that pass to fill the remapped area even with the larger data extraction. This means that under our initial objective of preserving all data, any blank areas in a processed image are due to an absence of available data in our archive and not from projection clipping. Two of the most common projections used by oceanographers are Mercator and Lambert Conformal. Different projections have different benefits (Bernstein 1983) and it is arguable that some projections preserve satellite features more accurately than others for large scale processing (Lloyd and D'Souza 1987). Many oceanographers simply stick with the projections with which they are familiar or for which they have other data sets - generally Mercator. As part of our initial objective to produce the simplest possible atlas, a non-oceanographic projection was selected. These atlases have a basic square projection, that is with parallel lines of latitude and longitude, called "Old style" code number 1 in the U of M remapping routines. Users of a U of M system can simply remap the atlas images into any of the 27 alternative projections available on the system. However, since any further remapping on a Miami or other system will only have the final 1024 by 1024 images to work with, the resulting image will usually display clipped areas. Other (non-Miami) users would have to create specific software to undo and replace the projection and so may prefer to stay with the given projections.

Graphics Overlay

There are some basic operations connected with these images which could be difficult to reproduce on some simple processing systems. An example is the reproduction of a graphic coastline for a landmask . Hence a standard or reference set of graphics (or bit planes) has been provided for each atlas (see Figures 6 onwards). These graphics consist of, where applicable:

i) coastline

ii) bathymetry contours

iii) latitude and longitude grid lines

and they are located on the first volume of each area of the atlas tapes. Plots of the graphics shown in this report have been slightly modified for clarity. In the digital atlas version the grid lines (latitude and longitude) are drawn in full at the 2° intervals indicated on the diagrams and the land masses have not been filled in (an easily available option on most image systems). The graphic overlays represent fairly elemental display/analysis tools for the scientist; for example combining two adjacent land areas should show continuity of the coastlines. The coastline overlays have all been carefully selected from the the best navigated images for that area. It is hoped that if the naviagation and remapping errors are small enough, then one carefully selected set of graphics can act as the "standard" for that area of the atlas. This means that large deviations from that standard can be considered an error and that image either discarded, reprocessed on a Miami based system or corrected with "rubber stretching" routines (Drury 1987) available on basic image processing systems.

That is the principle; in practice some immediate problems arise. Graphic display formats and manipulations are more variable between both hardware and software systems. Even simple decimation for graphics is absent on most systems. (This feature is now apparently available on the PCI EASI/PACE software for version 4.1.) This means that if users have a work station rather than an image processing terminal, they may have limited options of working with the graphics provided. In this context an image terminal is one which comes in exact multiples of 512 by 512; most work stations do not e.g. the BIO SUN/3 comes with a maximum window of 960 by 1130 but can only work with an image window of 840 by 840. This automatically means that the processed images cannot be displayed in full resolution except by one section at a time. It also means that a user can only work with the preprocessed graphics in a 512 by 512 window and hence with an image of only one quarter the resolution of the original. The options for true image terminals are to work with either the 512 by 512 image/graphics or 1024 by 1024 image/graphics. To maximise all the options the graphics in the atlases have been provided in both 512 and 1024 (in the form of four 512 sections) sizes. Of course users may write additional software to achieve these additional graphics manipulations. Alternatively, if coastline and bathymetric databases are available, users may prefer to generate their own graphics once their systems recognise the given image projection co-ordinates.

Quality Control

With the completion of all the atlases for 1984 to 1986 approximately 30,000 images have been created and stored in 16 atlases with an average of 20 volumes (magnetic tapes) per atlas. This number of images will undoubtedly lead to human error and operational procedures were included in the hopes of minimising such errors. A series of manual checklists were installed at various stages in the "production line" of image creation. A very detailed list of these checks can be found in the contactors final report (Seakem 1989) available from the contractors report section of the DFO/BIO library. The final series of checks are covered by the APR (Atlas Processing Record) sheets which cover the progress of work conducted on each IAxxxx tape from the time it left the government tape repository to its eventual return. The APR sheets (Figure 5) cover 7 main categories of processing during which different checks were made. These categories are: Ingest, Navigation, Navigation Confirmation, Batch submission, Batch run, Batch checking and Backups. Many of the checks installed are relatively simple and consist of confirmation that a specific job has been successfully completed as intended (e.g. that specific image files have been created and checked off before the next stage of processing begins.)

In order to save disc space only those satellite channels specifically required for processing of a specific pass were ingested. BIO Ingest procedures require a check that the correct channels have been ingested according to the satellite type (even or odd). A check was also made that the full number of lines of data had been transferred from tape to disc (that is all the data were analysed). Most of the errors encountered at this stage and logged into the file READERR.txt were corrected on a second attempt unless a tape remained unreadable. The READERR files are available onsite.

The Navigation quality control however requires much more visual assessment and checking. After a navigation correction has been made it needs to be assessed. A first visual assessment or confidence rating for the direct area being navigated is made using the levels; GD - good, OK- fine, PR- problem (only given after the second attempt), NN - not navigable, I - interpolated navigation. These last two categories have entries in the NAVERR.txt file appearing as an appendix in atlases O and P. The latitude and longitude used to perform the navigation are recorded, as are the atlas division into which this area falls and the distance of the location from the satellite nadir. An additional check on the navigation is made by looking at the level of accuracy for the pass as a whole. This is done by comparing the WDBII coastline with the land around the edges of a scene. This could result in the need for a YAW correction, in which case an entry is made in the NAVERR.txt file. The degree of the YAW correction is qualified by levels of 3,2,1.5, or 1 (see Catalogue section for code). Indirectly the degree of cloud cover is one of the largest contributors to navigation error. If clouds cover a sufficient proportion of the image there may be inadequate coastlines available to perform an accurate navigation. Since the level of accuracy obtained in navigation tends to be subjective and will also propagate throughout the analysis, a Navigation Confirmation is performed.

Where possible this consists of another operator independently checking the image/coastline agreements and quality codes assigned.

Most of the Batch submission and run checks consist of keeping track of files submitted and created during processing. The average real time used by the batch jobs (all regions) running overnight (system at minimal use) was between 1.5 and 2.5 hours depending on use. This allowed about 4 satellite passes to be processed each night. In order to complete the atlas within the specified timeframe it was necessary to pass additional images to another VAX system via ethernet connections. This micro-VAX was only used to perform some of the required tasks so that further checking was required when images were returned to the main VAX-750. All the errors occuring during this section were recorded in BAERR.txt which is available onsite. As with many of the READERR entries, problems within this section of the processing could be corrected and the analysis repeated.

At the Batch checking stage there were again more quality assessments. The overview atlas (O) was used to confirm which divisions of the atlas did have data in them and to check off both via directories and the manual display of divisions that all these areas were correctly assigned. Checks were made that each IR and visible image were present and held valid data, were the appropriate area and that the IR/VIS pair matched. The overview area was also used to estimate the quality of the satellite data for SST (only) content. The levels of assessment used were VG, G, P, S, and O (see Catalogue section for code). The divisions were also examined for significant quantities of thin cloud which could appear as false SST values; an additional qualifier of C was added to the above if this category could be determined by purely visual means.

At the backup stage the quality control checks again consisted of keeping track of jobs, especially if consecutive backup was delayed by individual problem files. After completion of all three years of the atlas, the first year of the final tapes containing the preprocessed images were read to ensure that all data files could be retrieved. At this stage about 0.05% of the data was unreadable and because of the small number involved those files were reprocessed. Years 2 and 3 (85, 86) were not checked (due to fiscal limitations) but the same low level of unreadable images is anticipated.

CALIBRATIONS AND PROCESSING ERRORS

One of the largest drawbacks to performing so many production like operations in a research environment is that any software/technical problems which arise tend to hold up the production line. With contract work the usual solution is to advance with all images through those stages of the production which can be completed. This has the drawback that some inaccuracies or inconsistencies in choice only show up in later stages of the processing by which time insufficient resources (either person-years or money) are left to produce a more consistent routine or assessment.

Errors or inconsistencies will exist at various stages in the atlas processing and end users are requested to please log all errors affecting their atlas and provide feedback to BIO. Some of the errors are relatively minor , although annoying, and become obvious as the user passes through each stage in the use of the atlas. The catalogue entries record 100% data only as 99%, some entries in the atlas indicate 0% data (then why an entry at all?), for others there is no navigation accuracy code given. When retrieving images from the atlas tapes, a very small fraction will probably be unreadable. When working with a series of images the navigation will not be at the same level of accuracy for all images in the series. As the images are used to produce temperature maps or composites several technical/scientific limitations apply (see previous sections). All the images were intended to have the same pixel-dump temperature scale, but due to a human processing error at an early stage this did not happen.

For NOAA 6 and 8 pixel-dump to temperature conversion:

Temp °C = 0.125 × pixel dump − 3.00 [NOAA 6 and 8]

For NOAA 7 and 9 the temperature conversions have an additional processing error of ± 2 counts at one standard deviation. For NOAA 7 the pixel dump to temperature conversion is:

Temp °C = 0.131 × pixel dump − 4.66 [NOAA 7]

For NOAA 9 the pixel dump to temperature conversion is:

Temp °C = 0.119 × pixel dump − 1.41 [NOAA 9)

The Atlas images were processed using standard NASA NOAA 9 radiometric conversions for each channel. If the user wishes to compare atlas temperatures to other NOAA-9 temperatures processed with the non-linear (n-1) radiometric conversions (Brown et al. 1985) then the approximate conversion formula is:

Temp (n-1) °C = 0.131 pixel dump − 3.76

The error associated with this conversion is ± 4 counts. Because of the processing error the temperature range of the different types of imagery is slightly different. Temperatures were output to the atlas images at integer levels between 4 and 245; integer levels outside this interval were allocated to masks (e.g. all cloud areas in the images have a digital pixel dump of 4). Although a temperature conversion is provided for NOAA 6 and 8, accurate temperatures cannot generally be derived from these satellites (see previous sections). With consideration for the 2 count processing error, the typical temperature range retrievable from the NOAA 7 atlas images (after use of the above conversion equations) is − 4°C to 27°C and for the linear NOAA 9 atlas images − 0.7°C to 27.5°C. These changes in minimum temperatures will also mean minor inconsistencies in the recorded histograms of amount of non-cloud data given in the catalogues (see Appendices). Temperature data below approximately minus 1°C for NOAA 9 and minus 4°C for NOAA 7 will have been logged as cloud. This will have a minor effect on the majority of warm images but will mean that some (− 1.8°C to approx − 0.8°C) true cold water temperatures have been irretrievably lost in the NOAA 9 atlas images. (These could still be retrieved from the original AVHRR archived tapes). The additional errors introduced in the processing stage are still relatively small compared to the typical ± 8 counts (± 1°C) accuracy associated with the comparison of satellite data with measured sea surface temperatures (Robinson and Ward 1989). The temperatures derived from the conversion equations are still satellite global estimations and actual temperatures for the east coast of Canada may have different absolute values, particularly if dependent on or biased towards any of the limitations previously discussed. Local algorithms have not been discussed in this report but interested users may contact BIO for any updated improvements on local algorithm performance.

CATALOGUE AND TAPE INVENTORIES

To access a digital atlas, which unlike a traditional atlas cannot be seen without the assistance of a computer, a catalogue (see Appendix 1) of available images is required. The catalogue has to relate sufficient information to users so that they can choose images appropriate to their applications. The basic information of YEAR, JULIAN DAY, file number, IR no. and VIS no., and volume number, VOL, for an atlas division will allow the user to locate images (maps) of both temperature and visible data. The term ND indicates that there is no raw tape in the AES/BIO archive for that julian day, NA indicates that there is no area for this division, the daily satellite pass falls outside the atlas area. A decimal addition after the julian date indicates the hour in GMT of the satellite pass when two daily passes have been recorded by AES. The amount of useful data to be retrieved can be judged from the information of %D, percentage of stored area which has data, and %clr, percentage of real (as opposed to stored) data which does not include solid (i.e. opaque) cloud cover. Due to inconsistencies between various histogram programmes full coverage is logged as 99% not 100%. The difference is considered sufficiently small not to affect the use of the catalogue. Depending on the application, users for SST can minimise data retrieval by using the following quality assessment codes:

VG very good; the data are consistent and appear to show SST patterns.

G good; the data are nearly coherent.

P patchy; large patches of data are interspersed with cloud.

S speckled; the data only exist as small (< 50 pixel) areas.

O little or no SST data exist in the area.

These codes may also appear in combination; e.g. PS in which case the dominant qualifier appears first. The appendum /C indicates the visual presence of thin cloud cover likely to contaminate SST values (see Quality Control section). For many applications these catalogue entries will be sufficient to allow a user to select data. When a user's application involves the accurate location or accurate estimate of movement of a feature or the composition of numerous images then an assessment of navigation accuracy (NAV ACC.) and confidence (NAV Conf.) will be required. The categories for navigational confidence are simply GooD, OK, or PRoblem. The qualifier /n is coded by:

3 if there are land areas visible in 3 opposite corners then the yaw correction should improve the navigation.

2 if two opposite corners can be seen at their extremes then the yaw correction should be fairly good.

1.5 if two opposite corners can be seen, but only one is at the extreme then the yaw correction is probably useful.

1 only one corner can be seen and no valid yaw correction can be made.

Yaw corrections are not used frequently by BIO researchers working with regional data and hence the local level of experience of both applying and evaluating yaw corrected images will be less than for the other types of navigation corrections. Users should bear this in mind when working with yaw corrected images and any feedback to BIO would be much appreciated. The parameters for the navigation accuracy are the distance in pixels of the navigation centre from satellite nadir and the atlas division in which navigation was conducted (e.g. 72/F indicates 72 pixels from nadir, atlas area F). The satellite (SAT) type NOAA 6,7,8,or 9 is included in the list and will be of use to avoid including 6 and 8 images in any composites or time series of station temperatures. These satellite images can, however, be used to follow features etc. (see earlier sections). The other item in the catalogues is the IA# containing the raw satellite pass. This only has direct application for use at BIO but can be linked to the data holding list to identify the pass specifically if a user is searching other databases for additional passes for that day, or the same pass at a full 10 bit accuracy.

ACCESS TO ATLAS AND CATALOGUES

The first access to information about the catalogue of processed SST/visible images is via the traditional means of a hardcopy data report in the Canadian Data Report Series available to libraries and individual users. Since many planned or future data/information systems will include direct computer access to data and data searching methods, an initial link between traditional hardcopy and "electronic" catalogues has been achieved by storing the report and catalogue information on the VAX at the BIO Image Analysis Facility. Users who have authorised access to networks into the DFO/BIO/VAX ethernet system may log into a "captured" (limited access, read only) user account called ATLAS. The current password for this account can be obtained on request. The structure of the account and the file naming procedures are displayed automatically after login. Operations within this account are via standard VAX/VMS commands such as directory/type/print etc. The type of VAX editor most useful to the user to scan and manipulate the catalogues will depend on the users own terminal/keyboard type.

The processed SST and visible images are only available on magnetic tape in ANSI-labelled format (American National Standard X3.27 - 1978). Potential users unable to handle this format should contact the systems manager at the BIO Image Analysis Facility for advice. The images and graphics on these tapes are direct copies of Miami files in Newstyle (post 1987) format. Individual users will need to write appropriate tape read/input routines to handle such foreign formats. Format details are given in the U of M manuals, DSP Image File Format (August 24 1988) available from the University of Miami or from the BIO systems manager. The digital atlas tapes are available to outside research users and educational establishments on the same basis and regulations as those governing the transfer of non-imagery DFO marine data. Requests for guidelines and clearance for commercial and non-DFO related use of the atlases should be directed to the Industrial Liaison Officer at BIO.

For external users who have acquired the atlas tapes for use on their own VAX/VMS system, files are retrieved from the atlas magnetic tapes with the VMS COPY command after mounting the tape with the VMS mount command, using a block size of 6144. The standard VMS wildcard facility can be used when naming the file(s) to be retrieved from the atlas tape. It is not necessary to specifically "skip" unwanted files as only those named in the COPY command will be retrieved. The first volume (tape) of each atlas also contains some additional files as per the following example for atlas area x:

REPORT.TXT	(the text of this report, diagrams excluded)
CATx84.TXT	(catalogue for year 1984 for atlas area x)
CATx85.TXT	(catalogue for year 1985 for atlas area x)
CATx86.TXT	(catalogue for year 1986 for atlas area x)
READERR.TXT	(Read error log - see quality control section)
NAVERR.TXT	(Navigation error log - see navigation section)
BAERR.TXT	(Batch error log - see quality control section)
SKx1.LIS to SKxn.LIS	(A directory listing of the file/image names for each volume (tape) 1 to n for atlas region x).

These header files on the first volume are immediately followed by the processed images, SST and visible, starting from January 25th 1984. Any of these text files can be retrieved from the tape with the copy command and viewed or printed with the VMS LIST or PRINT command after retrieval.

SUMMARY

This report has outlined the production of a pilot atlas of satellite imagery. All the images have been converted to either a temperature or a visible (albedo) map with intended identical range and with the same map projection. The limitations of the data have been identified at the various processing stages. Much of the research work being conducted in this field aims at producing better imagery with the expectation that the next generation of satellite sensors (e.g. ATSR - Along Track Scanning Radiometer) will achieve these improvements. However, all the limitations on the correct and accurate interpretation of the satellite data should not hide the very successful studies and applications to which these data have been put. This archive of data has been used in studies such as Petersen (1987), Petrie et al (1987), Gratton et al. (1988) and Ikeda (1989) and many similarly successful oceanographic studies have been conducted using other infrared satellite archives e.g. Simpson and Bowers (1979); Brown et al. (1983); Olson et al. (1983); Evans et al. (1985); Brown et al. (1986); Cornillon et al. (1987).

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This prototype atlas was created using the software created at the Rosenstiel School of Marine and Atmospheric Science, University of Miami. Considerable thanks are expressed to Drs. Otis Brown, Bob Evans and to Jim Brown and the Miami group in general who have helped BIO maintain a research capability in satellite image processing and provided scientific advice and support.

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This atlas has been created primarily for research and development work. The limitations of interpreting sea surface temperatures derived from satellite imagery have been stated but other limitations may also exist and come to light as the data are used more. In no event shall the Department of Fisheries and Oceans, Government of Canada be held liable for any special, indirect or consequential damages or any damages whatsoever arising out of or in connection with the use and interpretation of the processed atlases.

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Table 1. Catalogue Names and Area Co-ordinates

Area Names:

	(Full resolution areas)
A	GULF OF MAINE AND MID ATLANTIC BIGHT
B	SCOTIAN SHELF, SLOPE AND GULF STREAM
C	NEWFOUNDLAND BASIN AND GULF STREAM
D	GULF STREAM EXTENSION/RECIRCULATION
E	GULF OF ST. LAWRENCE
F	EAST NEWFOUNDLAND SHELF AND SLOPE
G	NORTH ATLANTIC CURRENT
H	HUDSON STRAIT AND UNGAVA BAY
I	LABRADOR SEA
J	IRMINGER SEA
K	SOUTHERN BAFFIN BAY AND DAVIS STRAIT
L	EAST GREENLAND CURRENT/DENMARK STRAIT
M	SOUTHERN HUDSON BAY AND JAMES BAY
N	NORTHERN HUDSON BAY AND FOXE BASIN

(NOT full resolution data)

O	OVERVIEW DATA: EAST COAST OF CANADA SATELLITE PASS
P	WESTERN NORTH ATLANTIC: GULF OF MAINE TO HUDSON STRAIT

@,#,$,%,* - COMBINED REPORTING IN CANADIAN DATA REPORT SERIES

Area	Temp	Vis	Centre		Resolution	(Deg/Pixel)
Suffix			Long	Lat	Long	Lat
A@	X	X	-70.28	40.50	0.01315	0.01
B@	X	X	-60.88	40.50	0.01315	0.01
C@	X	X	-47.48	40.50	0.01315	0.01
D@	X	X	-34.08	40.50	0.01315	0.01
E#	X	X	-63.35	50.50	0.01572	0.01
F#	X	X	-51.95	50.50	0.01572	0.01
G#	X	X	-35.92	50.50	0.01572	0.01
H$	X	X	-67.62	60.50	0.02031	0.01
I$	X	X	-58.51	60.50	0.02031	0.01
J$	X	X	-38.20	60.50	0.02031	0.01
K%	X	X	-60.10	67.12	0.02572	0.01
L%	X	X	-33.74	67.12	0.02572	0.01
M%	X	X	-85.70	56.12	0.01793	0.01
N%	X	X	-81.56	66.12	0.02470	0.01
O*	X	O	-55.00	58.00	0.18	0.11
P*	X	X	-55.00	50.50	0.0393	0.025

TABLE 2: NAVIGATION ERROR CODES

CODES	NAVIGATION PROBLEMS
AD	All but the nadir of the WDBII should be moved down
* BAD	something is wrong with the image resulting in a bad navigation
CST	WDBII coastline is wrong
LLU	Lower Left WDBII coastline should move up
LO	the top and bottom on the left side should move in the opposite direction
LRO	Left and right sides should move in the opposite direction
LRU	Lower Right WBDII coastline should move up
LSR	left side should move to the right
O	opposite corners move opposite
PU	opposite corners of the WDBII should both move up
Q	clouds make navigation questionable
RO	top and bottom on the right side should move in the opposite directions
RSL	right side should move to the left
S	strange
TBO	Top and bottom should move in the opposite direction
TD	top WDBII coastline should move down
TD(V)	variation on top down
UO	the Upper Left and Upper Right should move in opposite directions
ULD	the upper left WBDII coastline should move down
URD	the upper right WDBII coastline should move down
URD(V)	variation on URD
URU	the upper right must move up
< >	horizontal yaw problem: top & bottom should move right & left opposite each other
/6,8	if not a NOA7 then the satellite is specified
> <	left and right sides must move together towards the center line

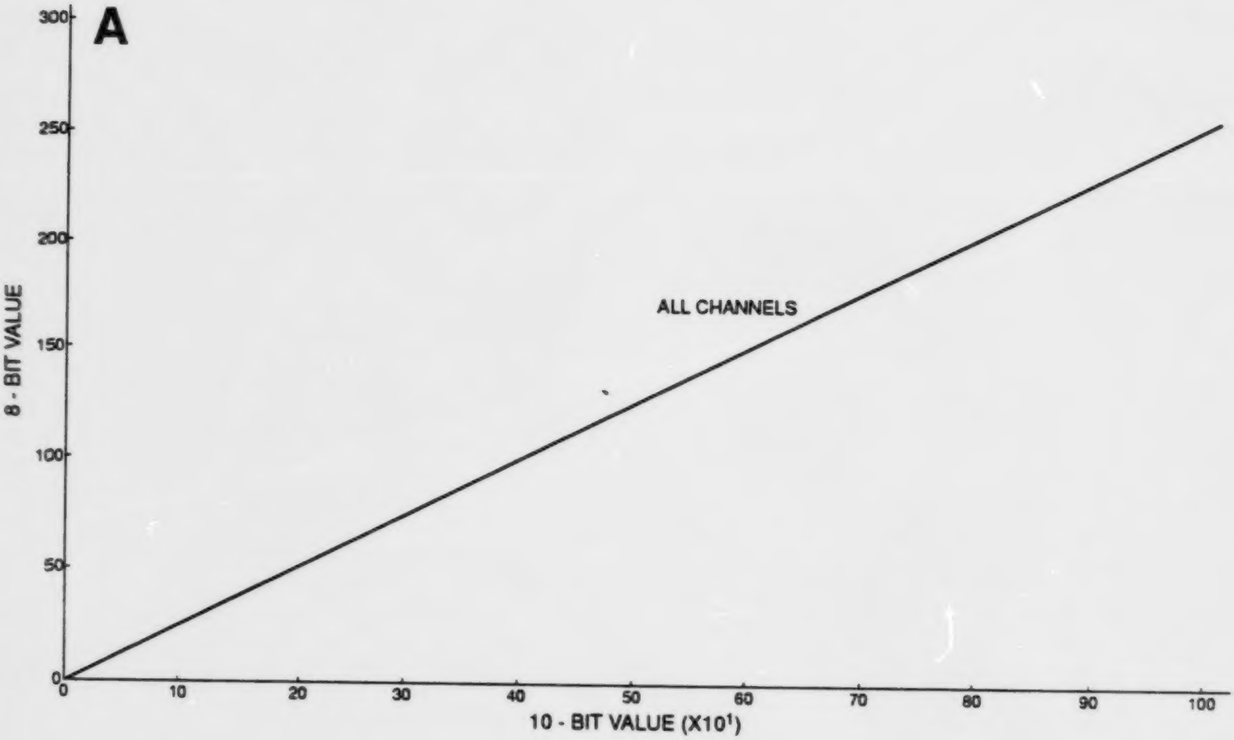


Fig 1 Conversion values for NOAA 7 data (10 to 8 bit)

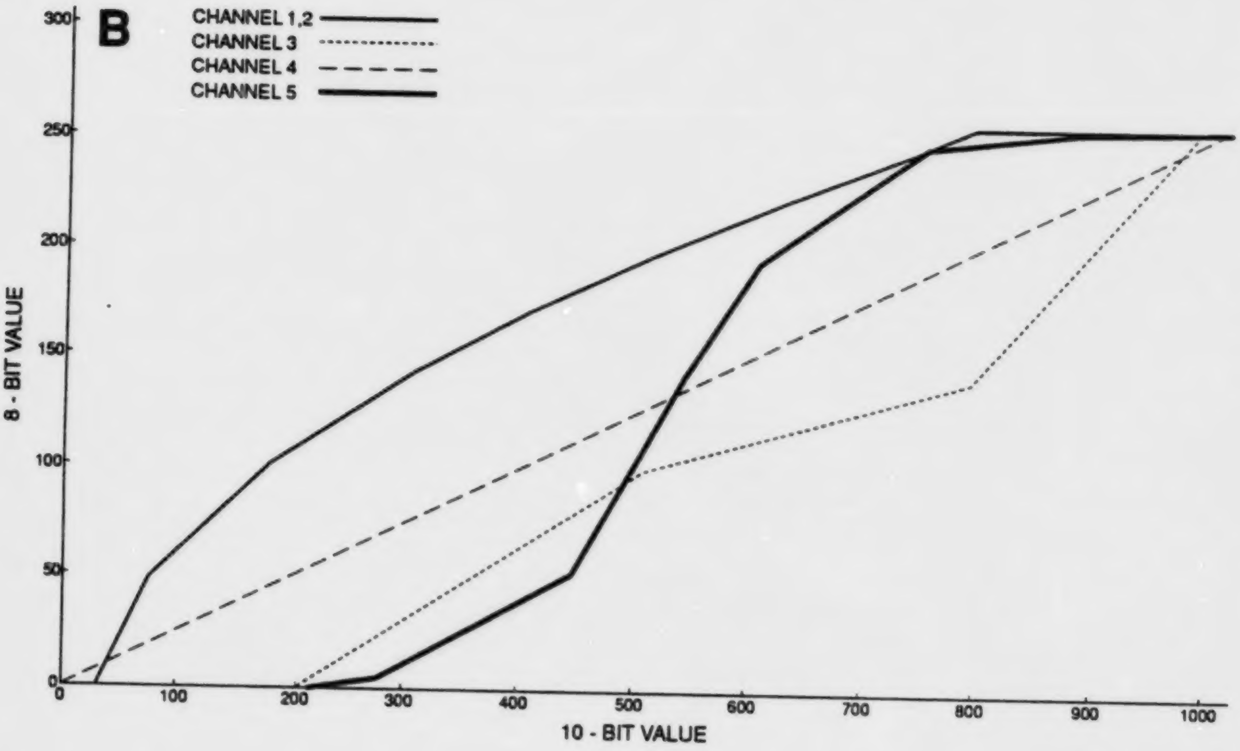


Fig 2 Conversion values for NOAA 9 data (10 to 8 bit)

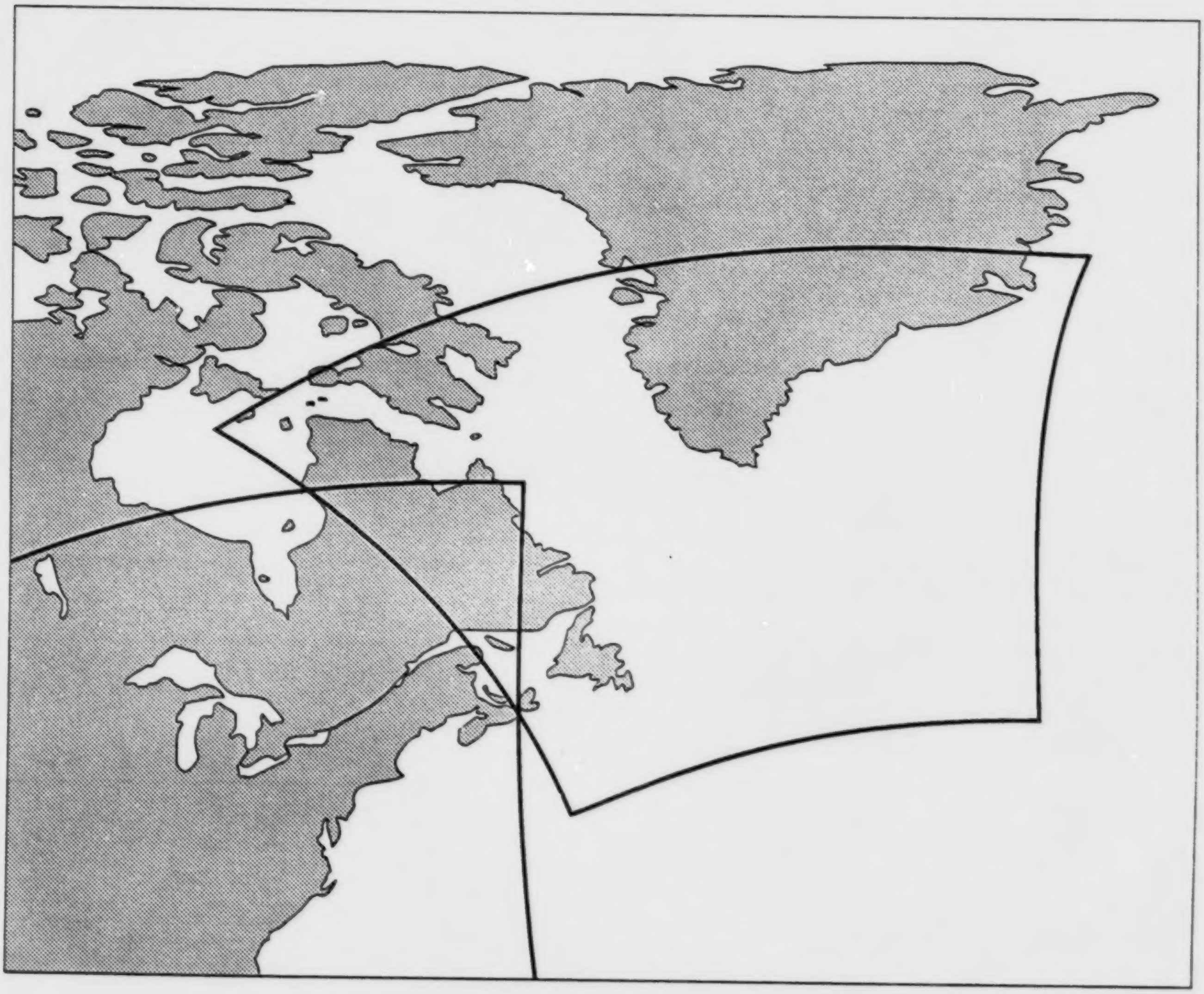
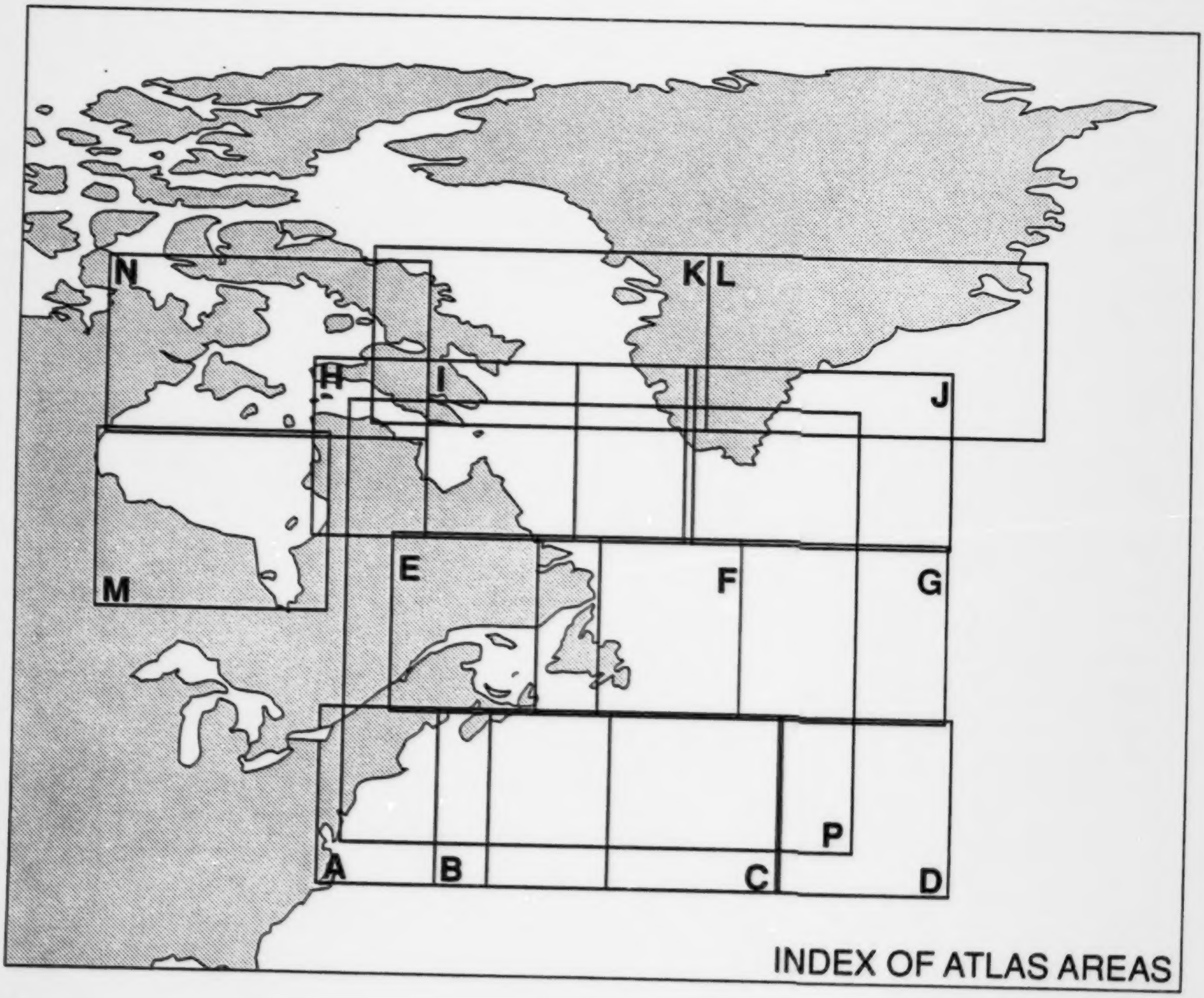


Fig 3 East coast of Canada satellite pass: coverage


N
H
I
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D
INDEX OF ATLAS AREAS

Fig 4 Geographic Atlas Areas

ATLAS PROCESSING RECORD

SEAKEM OCEANOGRAPHY

IA_____ ID_______________.NO__

TAPE CHECKED OUT OF BIO ARCHIVE:

Filing Information | Notes | Comments | Done

INGT

No. Time/date | Ac. | Op.

NOA___ CH_____ DR_____
BLOCKS______ LINES_____ STD ___

READERR DOC___

Problems:

Solution: ☐

NAV

No. Time/date | Ac. | Op.

LON______ LAT_____ DIV___ DIST____
CONF____ YAW_____ SAVE___ DBM___

V Rating:__ NAVERR DOC___

Problems:

Solution:

2nd image: bad line: ☐

NAV CHK

No. Time/date | Ac. | OpB.

Nd: U__: L__: changed___ ☐

BATCH SUB

No. Time/date | Ac. | Op.

INF___ SATN___ COMP______ Q#______ LOG#_____ Pr#___

Problem: ☐

BATCH RUN

No. Time/date | Ac. | Op.

InBL______

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
.RMG																

☐

Problem: ELT______ ENDT______ LOGOK__ EXCL______ BAERR DOC___ ☐

BATCH CHECK

No. Time/date | Ac. | Op.

SYS________

F#______ 45__

NAVC_________SYS_____

Problems: 750toSUN___

		A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
	OVERVW																
DIR	IR																
	VIS																
DISPLAY	IR																
	VIS																
	CL																
	SUN																

☐

BU

No. Time/date | Ac. | Op.

Problems:

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
TBUT_____																

☐

DEL .RMG ID______ A__B__C__D__E__F__G__H__I__J__K__L__M__N__O__P__ ☐

FIN Date: Signature: ☐

TAPE CHECKED BACK INTO BIO ARCHIVE:

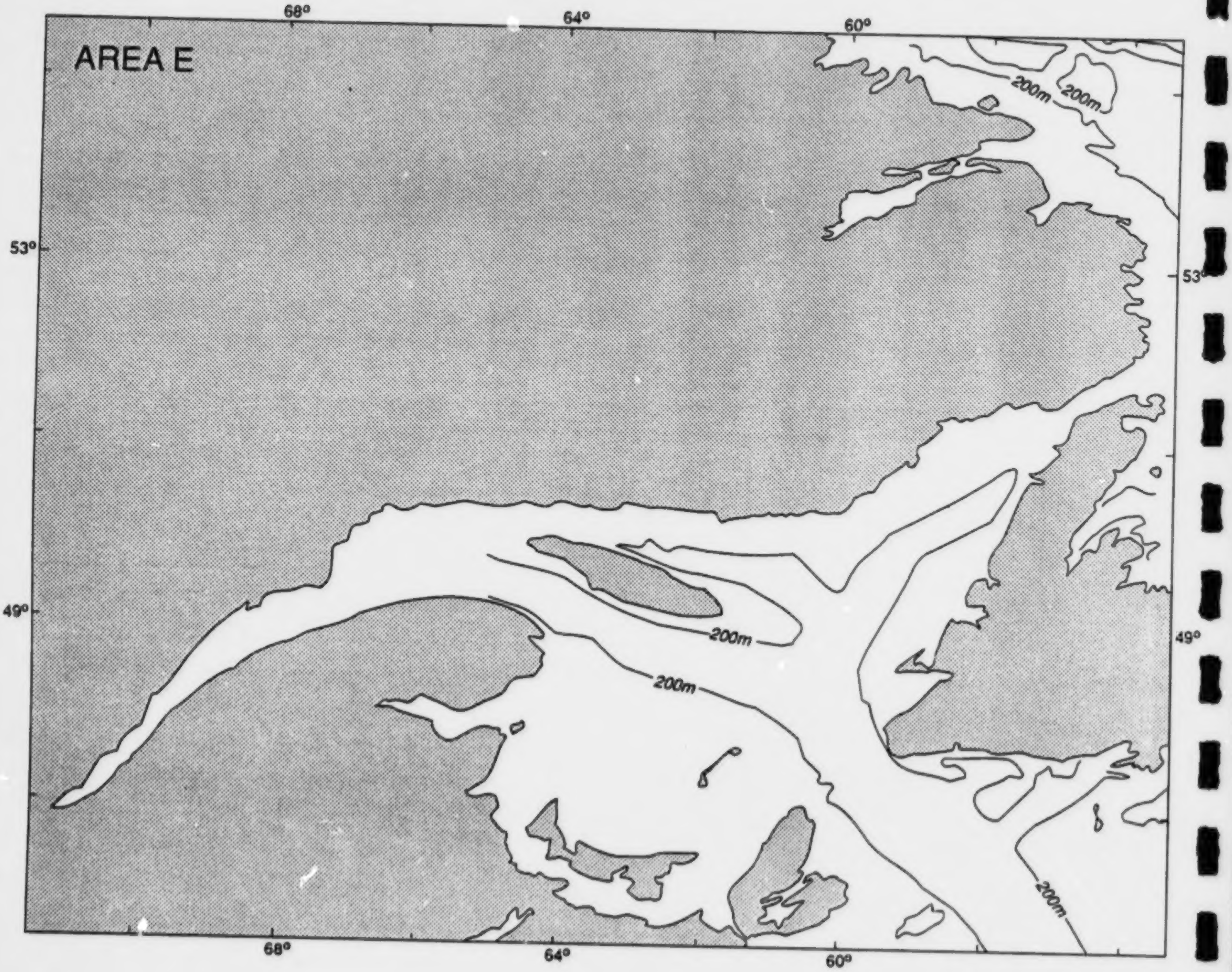
AREA E
68°
64°
60°
53°
53°
49°
49°
200m
200m
200m
200m
200m
68°
64°
60°

Fig 5 Graphics overlay; combined coastline, grid and bathymetry

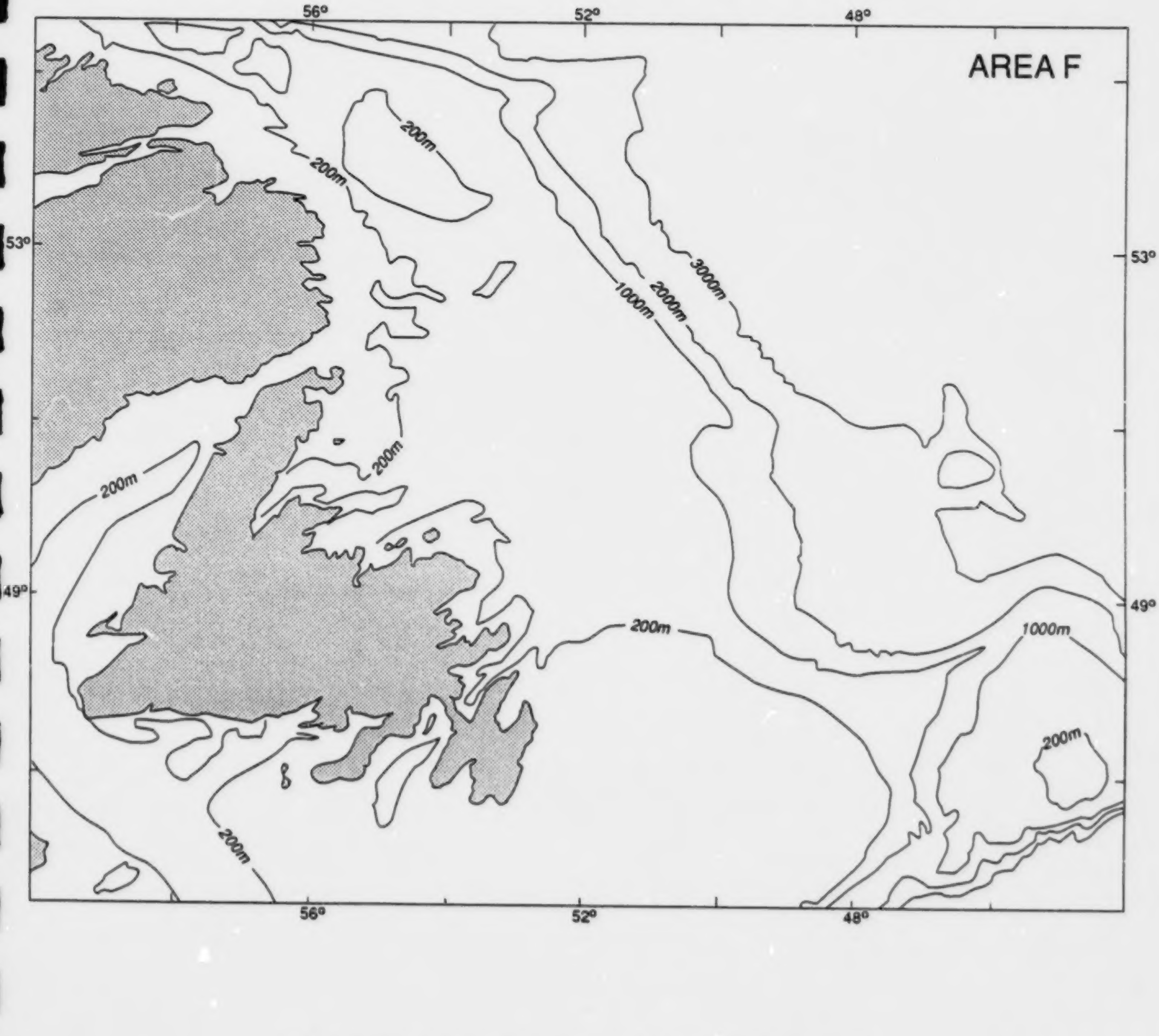
AREA F
56°
52°
48°
53°
49°
200m
1000m
2000m
3000m

Fig 7 Graphics overlay; combined coastline, grid and bathymetry

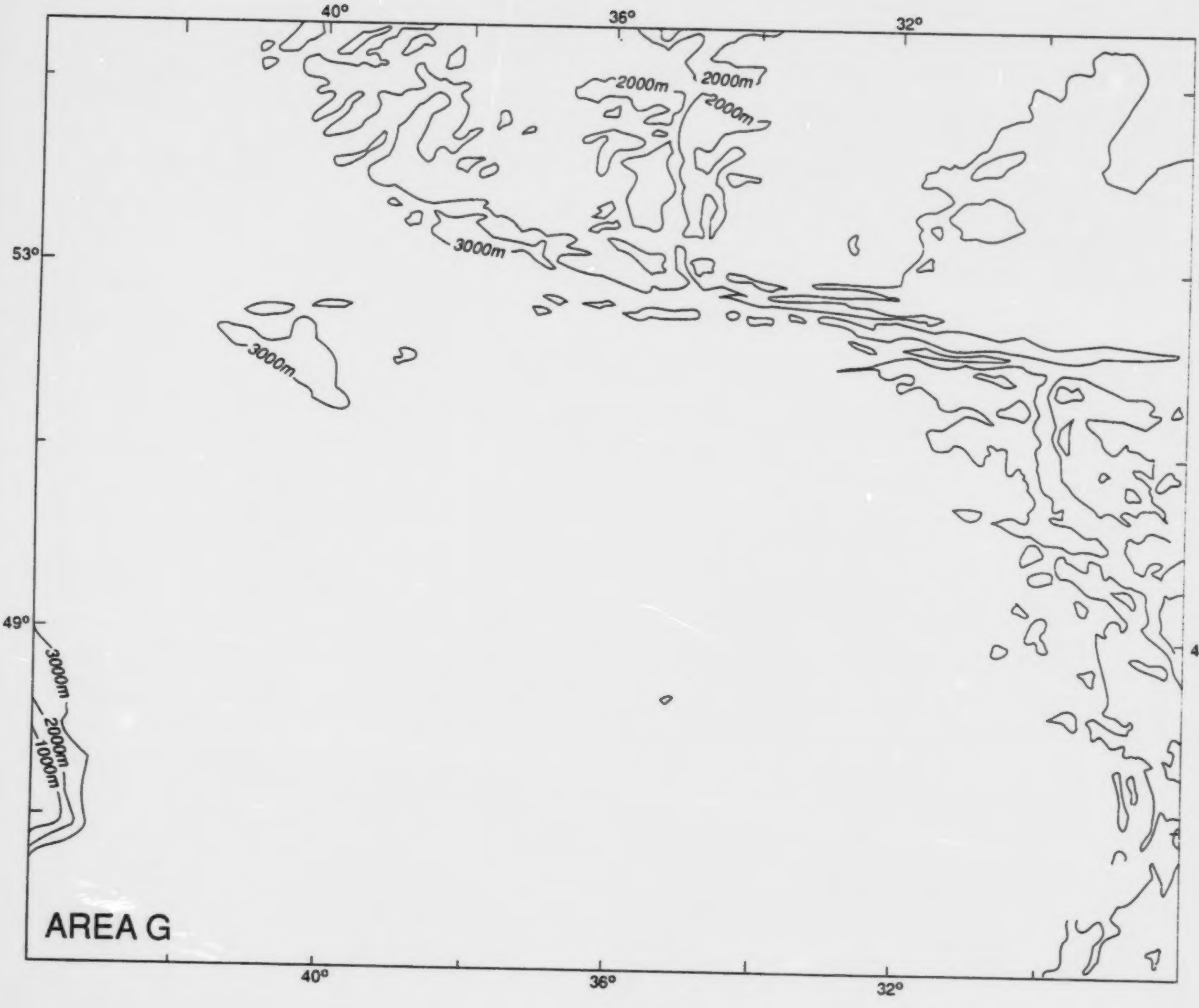
40°
36°
32°
53°
49°
2000m
3000m
3000m
1000m
AREA G

Fig 8 Graphics overlay; grid and bathymetry

Appendix 1: Catalogue of Daily SST and Visible Images in Area E

JUL day	YR	IR no.	VIS no.	Vol	IA#	Sat	Nav. Conf.	Nav. Acc.	%D	% clr	Qual.
001	/84	ND		NO TAPE							
002	/84	ND		NO TAPE							
003	/84	ND		NO TAPE							
004	/84	ND		NO TAPE							
005	/84	ND		NO TAPE							
006	/84	ND		NO TAPE							
007	/84	ND		NO TAPE							
008	/84	ND		NO TAPE							
009	/84	ND		NO TAPE							
010	/84	ND		NO TAPE							
011	/84	ND		NO TAPE							
012	/84	ND		NO TAPE							
013	/84	ND		NO TAPE							
014	/84	ND		NO TAPE							
015	/84	ND		NO TAPE							
016	/84	ND		NO TAPE							
017	/84	ND		NO TAPE							
018	/84	ND		NO TAPE							
019	/84	ND		NO TAPE							
020	/84	ND		NO TAPE							
021	/84	ND		NO TAPE							
022	/84	ND		NO TAPE							
023	/84	ND		NO TAPE							
024	/84	ND		NO TAPE							
025	/84	11	12	1	0001	7	GD/0	300/E	98	6	
026	/84	13	14	1	0002	7	GD/2	163/F	99	2	
027	/84	15	16	1	0003	7	OK/3	72/F	99	3	
028	/84	17	18	1	0004	7	GD/3	>512/E	99	9	
029	/84	19	20	1	0005	7	OK/1.5	430/F	94	6	
030.17	/84	21	22	1	0006	7	OK/1	>512/E	83	4	
030.19	/84	23	24	1	0007	7	OK/3	190/E	99	5	
031	/84	25	26	1	0008	7	GD/3	257/H	99	0	
032	/84	27	28	1	0009	7	GD/2	26/E	99	6	
033	/84	29	30	1	0010	7	GD/3	57/E	99	4	
034	/84	31	32	1	0011	7	PR/1.5	17/E	99	6	
035	/84	33	34	1	0012	7	OK/1	65/F	99	3	
036	/84	35	36	1	0013	7	OK/1.5	312/E	99	1	
037	/84	37	38	1	0014	7	GD/3	>512/I	95	6	
038	/84	39	40	1	0015	7	GD/0	271/I	85	1	
039	/84	41	42	1	0016	7	OK/3	200/E	99	1	
040	/84	43	44	1	0017	7	OK/3	10/E	99	0	
041	/84	45	46	1	0018	7	OK/3	22/E	99	2	
042	/84	47	48	1	0019	7	OK/2	189/E	99	2	
043	/84	49	50	1	0020	7	OK/2	93/F	99	16	
044	/84	51	52	1	0021	7	OK/2	134/F	99	25	
045	/84	ND		NO TAPE							
046	/84	53	54	1	0022	7	OK/3	200/I	86	26	
047.17	/84	55	56	1	0023	7	OK/2	54/I	72	20	
047.19	/84	57	58	1	0024	7	GD/3	49/E	99	34	
048	/84	59	60	1	0025	7	OK/3	50/E	99	33	
049	/84	61	62	1	0027	7	PR/3	0/E	99	26	
050	/84	63	64	1	0026	7	PR/3	122/E	99	10	
051	/84	65	66	1	0028	7	OK/3	155/H	99	1	

JUL day	YR	IR no.	VIS no.	Vol	IA#	Sat	Nav. Conf.	Nav. Acc.	%D	% clr	Qual.
052	/84	67	68	1	0029	7	OK/3	122/F	99	5	
053	/84	69	70	1	0030	7	OK/1.5	79/K	96	5	
054	/84	71	72	1	0031	7	GD/3	243/I	88	8	
055	/84	73	74	1	0032	7	GD/3	257/J	74	12	
056	/84	75	76	1	0033	7	PR/1	209/B	99	10	
057	/84	77	78	1	0034	7	GD/3	35/H	99	6	
058	/84	79	80	1	0035	7	GD/3	65/H	99	1	
059	/84	81	82	1	0036	7	OK/1	134/E	99	3	
060	/84	83	84	1	0037	7	OK/1.5	>512/NN	99	7	
061	/84	85	86	1	0038	7	PR/3	10/E	97	13	
062	/84	87	88	1	0039	7	PR/1.5	244/I	89	7	
063	/84	89	90	1	0040	7	GD/3	95/K	76	9	
064	/84	ND		NO TAPE							
065	/84	91	92	1	0041	7	GD/3	0/E	99	17	
066	/84	93	94	1	0042	7	OK/1.5	215/H	99	3	
067	/84	95	96	1	0043	7	PR/3	90/F	99	8	
068	/84	97	98	1	0044	7	GD/1	164/F	99	6	
069	/84	99	100	1	0045	7	GD/1.5	342/F	98	2	
070	/84	101	102	1	0046	7	GD/2	296/E	91	1	
071	/84	03	104	1	0047	7	OK/1.5	>512/F	78	9	
072	/84	05	106	1	0048	7	OK/3	0/E	99	4	
073	/84	107	108	1	0049	7	GD/2	0/E	99	3	
074	/84	109	110	1	0050	7	OK/3	114/E	99	0	
075	/84	1	2	2	0051	7	OK/3	198/F	99	12	
076	/84	3	4	2	0052	7	OK/3	29/H	99	36	
077	/84	5	6	2	0053	7	GD/1	>512/F	99	15	
078	/84	7	8	2	0054	7	GD/2	470/E	93	12	
079.17	/84	9	10	2	0056	7	OK/2	304/E	81	19	
079.19	/84	11	12	2	0055	7	OK/3	50/E	99	16	
080	/84	13	14	2	0057	7	OK/3	400/E	99	31	
081	/84	15	16	2	0058	7	GD/3	120/E	99	47	
082	/84	17	18	2	0059	7	GD/1	100/E	86	52	
083	/84	19	20	2	0060	7	OK/3	0/F	99	22	
084	/84	21	22	2	0061	7	PR/2	70/F	99	16	
085	/84	ND		NO TAPE							
086	/84	23	24	2	0062	7	PR/3	490/F	94	28	
087	/84	25	26	2	0063	7	GD/2	150/K	83	15	
088	/84	ND		NO TAPE							
089	/84	27	28	2	0064	7	GD/3	0/E	99	30	
090	/84	29	30	2	0065	7	OK/1.5	360/E	99	24	
091	/84	31	32	2	0066	7	GD/2	300/E	99	32	
092	/84	33	34	2	0067	7	OK/3	0/F	99	35	
093	/84	35	36	2	0068	7	GD/3	219/F	99	38	
094	/84	37	38	2	0069	7	GD/3	461/F	95	33	
095	/84	39	40	2	0070	7	OK/2	203/I	85	39	
096	/84	41	42	2	0071	7	GD/2	297/H	99	25	
097	/84	ND		NO TAPE							
098	/84	ND		NO TAPE							
099	/84	ND		NO TAPE							
100	/84	ND		NO TAPE							
101	/84	43	44	2	0072	7	OK/1	240/E	99	29	
102	/84	45	46	2	0073	7	GD/1	>512/F	96	39	
103	/84	ND		NO TAPE							
104	/84	ND		NO TAPE							

JUL day	YR	IR no.	VIS no.	Vol	IA#	Sat	Nav. Conf.	Nav. Acc.	%D	% clr	Qual.
105	/84	ND		NO TAPE							
106	/84	ND		NO TAPE							
107	/84	47	48	2	0074	7	GD/1.5	0/F	99	56	
108	/84	49	50	2	0075	7	GD/3	167/H	99	13	
109	/84	51	52	2	0076	7	OK/3	54/F	99	50	
110	/84	53	54	2	0077	7	GD/2	357/F	97	80	
111	/84	55	56	2	0078	7	GD/3	214/K	88	45	PG
112	/84	57	58	2	0079	7	GD/3	176/E	99	14	P
113	/84	59	60	2	0080	7	0 /0	0/E	99	53	P
114	/84	61	62	2	0081	7	GD/3	76/E	99	67	VG
115	/84	63	64	2	0082	7	GD/3	0/E	99	86	VG
116.18	/84	65	66	2	0083	7	GD/1.5	0/E	99	52	G
116.20	/84	67	68	2	0084	7	GD/3	0/A	72	50	P
117.18	/84	69	70	2	0085	7	GD/2	172/F	99	80	G
117.19	/84	71	72	2	0086	7	GD/3	57/A	91	78	VG
118	/84	73	74	2	0087	7	GD/1.5	341/F	98	89	G
119	/84	75	76	2	0088	7	GD/1.5	>512/F	89	89	VG
120	/84	ND		NO TAPE							
121	/84	77	78	2	0089	7	GD/2	50/E	99	43	G
122	/84	79	80	2	0090	7	GD/2	186/E	99	43	PG
123	/84	81	82	2	0091	7	GD/1.5	36/E	99	36	PG
124	/84	83	84	2	0092	7	GD/2	0/F	99	57	VG
125	/84	85	86	2	0093	7	GD/1.5	102/F	99	48	P
126.18	/84	87	88	2	0094	7	GD/2	0/K	98	13	P
126.19	/84	89	90	2	0095	7	GD/1.5	51/A	99	12	PS
127	/84	91	92	2	0096	7	GD/3	0/E	91	9	P
128	/84	93	94	2	0097	7	GD/2	0/E	99	50	P
129	/84	95	96	2	0098	7	GD/2	110/E	99	65	G
130	/84	97	98	2	0099	7	GD/3	0/H	99	16	P
131	/84	99	100	2	0100	7	GD/3	155/E	99	33	P
132.11	/84	101	102	2	0101	8	OK/1	76/F	99	88	
132.18	/84	103	104	2	0102	7	GD/3	22/F	99	64	G
133	/84	105	106	2	0103	7	GD/3	39/F	99	24	G
134	/84	107	108	2	0104	7	GD/3	416/F	98	23	PS
135	/84	109	110	2	0105	7	GD/3	248/K	91	25	PS
136	/84	111	112	2	0106	7	PR/2	>512/F	79	28	P
137	/84	113	114	2	0107	7	GD/3	0/B	99	43	P
138	/84	115	116	2	0108	7	GD/2	0/E	93	66	G
139	/84	1	2	3	0109	7	GD/3	122/E	99	53	GS
140	/84	3	4	3	0110	7	GD/1	0/E	99	60	GS
141	/84	5	6	3	0111	7	GD/1	0/F	99	61	GS
142	/84	7	8	3	0112	7	GD/2	428/I	99	40	GS
143	/84	9	10	3	0113	7	GD/3	417/I	92	72	GP
144	/84	11	12	3	0114	7	GD/3	121/K	80	58	GS
145	/84	13	14	3	0115	7	GD/2	10/E	99	59	PS
146	/84	15	16	3	0116	7	OK/3	20/E	99	27	PS
147	/84	ND		NO TAPE							
148	/84	17	18	3	0117	7	GD/2	47/F	96	66	GS
149	/84	19	20	3	0118	7	GD/1.5	15/F	99	29	S
150	/84	21	22	3	0119	7	GD/2	247/F	99	48	P
151	/84	23	24	3	0120	7	GD/2	347/I	92	24	P
152	/84	25	26	3	0121	7	OK/2	162/I	81	18	S
153	/84	27	28	3	0122	7	OK/3	0/E	99	49	S
154	/84	29	30	3	0123	7	GD/3	0/H	98	30	GS

JUL day	YR	IR no.	VIS no.	Vol	IA#	Sat	Nav. Conf.	Nav. Acc.	%D	% clr	Qual.
155	/84	31	32	3	0124	7	GD/3	O/H	99	29	PS
156	/84	33	34	3	0125	7	OK/3	81/H	99	58	GS
157	/84	35	36	3	0126	7	OK/3	0/H	99	71	GS
158	/84	37	38	3	0127	7	OK/2	>512/E	99	61	PG
159	/84	39	40	3	0128	7	OK/3	>512/F	93	59	PS
160.17	/84	41	42	3	0129	7	OK/3	169/I	82	36	P
160.19	/84	43	44	3	0130	7	GD/2	0/E	99	51	PS
161	/84	45	46	3	0131	7	GD/2	0/E	99	61	GS
162.12	/84	47	48	3	0132	8	PR/3	0/E	99	97	G
162.19	/84	49	50	3	0133	7	PR/3	26/E	98	95	VG
162.22	/84	51	52	3	0134	8	PR/3	49/E	99	98	G
163	/84	53	54	3	0135	7	OK/3	78/E	99	57	PS
164.08	/84	55	56	3	0136	7	PR/2	0/E	99	73	GP
164.18	/84	57	58	3	0137	7	GD/3	0/E	99	59	SP
165	/84	59	60	3	0138	7	OK/3	28/F	99	51	PS
166	/84	61	62	3	0139	7	OK/1.5	204/F	99	27	PS
167	/84	63	64	3	0140	7	OK/3	>512/E	94	26	S
168.17	/84	65	66	3	0141	7	PR/2	135/K	82	55	P
168.19	/84	67	68	3	0142	7	OK/3	0/E	99	63	PG
169.17	/84	69	70	3	0143	7	GD/3	0/K	66	58	P
169.19	/84	71	72	3	0144	7	PR/3	0/E	99	68	PS
170	/84	73	74	3	0145	7	PR/3	0/H	98	41	PS
171	/84	75	76	3	0146	7	PR/3	275/E	99	40	PG
172	/84	77	78	3	0147	7	OK/3	0/F	99	59	P
173	/84	79	80	3	0148	7	OK/3	66/F	99	55	SP
174.18	/84	81	82	3	0149	7	OK/3	224/E	99	51	PS
174.20	/84	83	84	3	0150	7	PR/3	0/A	95	48	PS
175	/84	85	86	3	0151	7	OK/3	?/F	94	76	GP
176.17	/84	87	88	3	0152	7	GD/1	?/F	14	72	P
176.19	/84	89	90	3	0153	7	GD/3	167/E	99	87	VG
177.17	/84	91	92	3	0154	7	PR/3	0/I	67	65	G
177.19	/84	93	94	3	0155	7	PR/3	?/?	99	58	PS
177.22	/84	95	96	3	0156	6	PR/3	0/F	99	78	P
178.07	/84	97	98	3	0157	7	OK/1	201/F	96	47	P
178.12	/84	99	100	3	0158	6	OK/3	86/I	99	73	PS
179.07	/84	101	102	3	0159	7	PR/2	?/F	77	25	PS
179.18	/84	103	104	3	0160	7	OK/3	29/E	99	56	P
180	/84	105	106	3	0161	7	PR/3	39/E	99	85	SG
181	/84	107	108	3	0162	7	OK/3	39/F	99	66	S
182	/84	109	110	3	0163	7	PR/3	370/F	99	60	SP
183.18	/84	111	112	3	0164	7	PR/3	403/F	94	52	PS
183.19	/84	113	114	3	0165	7	OK/3	203/E	99	53	PS
184	/84	115	116	3	0166	7	OK/3	0/E	99	85	G
185	/84	1	2	4	0167	7	OK/3	0/A	99	53	S
186	/84	3	4	4	0168	6	OK/3	201/E	99	79	P
187	/84	5	6	4	0169	7	OK/2	0/E	99	47	P
188	/84	7	8	4	0170	7	OK/3	0/E	99	80	P
189	/84	9	10	4	0171	7	OK/3	0/F	99	56	GS
190	/84	11	12	4	0172	7	PR/3	130/F	99	68	SP
191	/84	13	14	4	0173	7	OK/2	399/F	95	80	PS
192	/84	15	16	4	0174	7	OK/1.5	>512/E	85	72	PS
193	/84	17	18	4	0175	7	OK/1.5	72/I	70	70	S
194	/84	19	20	4	0176	6	OK/3	93/F	99	42	P
195	/84	21	22	4	0177	6	GD/3	0/E	99	76	G

JUL day	YR	IR no.	VIS no.	Vol	IA#	Sat	Nav. Conf.	Nav. Acc.	%D	% clr	Qual.
196	/84	23	24	4	0178	7	OK/3	0/E	99	71	G
197	/84	25	26	4	0179	7	OK/1.5	0/F	99	77	G
198	/84	27	28	4	0180	7	OK/2	198/F	99	45	P
199	/84	29	30	4	0181	7	OK/3	>512/E	96	67	GS
200	/84	31	32	4	0182	7	OK/3	>512/E	86	63	P
201	/84	33	34	4	0183	7	OK/3	0/E	99	89	GP
202.07	/84	35	36	4	0186	7	GD/3	385/F	99	80	GP
202.19	/84	37	38	4	0185	7	OK/1.5	0/E	99	85	G
202.22	/84	39	40	4	0184	7	OK/2	0/E	99	87	GS
203.07	/84	41	42	4	0187	7	GD/1.5	350/F	85	69	PG
203.19	/84	43	44	4	0188	7	GD/3	0/E	99	72	PS
204.11	/84	45	46	4	0190	6	GD/3	0/E	99	82	G
204.18	/84	47	48	4	0189	7	OK/3	0/E	99	75	G
205	/84	49	50	4	0191	7	OK/1.5	7/F	99	40	PS
206	/84	51	52	4	0192	7	GD/1	28/F	99	59	S
207.12	/84	53	54	4	0193	6	OK/2	0/A	99	89	PS
207.18	/84	55	56	4	0194	7	OK/1.5	361/F	96	59	S
207.19	/84	57	58	4	0195	7	OK/1.5	0/A	99	59	S
208	/84	59	60	4	0196	7	GD/1.5	>512/E	88	79	PG
209	/84	61	62	4	0197	7	GD/1.5	74/I	74	84	GS
210	/84	63	64	4	0198	7	OK/3	120/B	99	59	S
211.12	/84	65	66	4	0199	6	OK/3	200/E	99	91	P
211.19	/84	67	68	4	0200	7	OK/3	200/E	99	83	G
212	/84	69	70	4	0201	7	PR/2	400/E	99	83	P
213.11	/84	71	72	4	0202	6	OK/1.5	113/F	99	68	PG
213.18	/84	73	74	4	0203	7	OK/1.5	0/F	99	41	P
214	/84	75	76	4	0204	7	GD/1.5	267/F	99	80	S
215.18	/84	77	78	4	0205	7	GD/2	326/F	97	73	G
215.19	/84	79	80	4	0206	7	OK/2	400/E	99	70	GP
216.18	/84	81	82	4	0207	7	GD/2	400/I	89	84	GP
216.19	/84	83	84	4	0208	7	GD/3	120/A	99	84	S
217.17	/84	85	86	4	0209	7	OK/1	200/I	75	70	PG
217.22	/84	87	88	4	0210	7	GD/2	0/A	99	86	GP
218	/84	89	90	4	0211	7	GD/1.5	0/E	99	88	G
219	/84	91	92	4	0212	7	GD/1.5	60/E	99	67	P
220	/84	93	94	4	0213	7	OK/1.5	0/E	99	60	GP
221	/84	115	116	4	0214	7	GD/1.5	0/F	99	94	G
222	/84	95	96	4	0215	6	GD/1	222/F	97	85	G
223	/84	97	98	4	0216	7	GD/2	341/E	98	60	PS
224.18	/84	99	100	4	0217	7	GD/2	>512/E	91	89	PS
224.21	/84	101	102	4	0218	6	GD/1.5	326/E	97	90	PS
225	/84	ND		NO TAPE							
226	/84	ND		NO TAPE							
227	/84	103	104	4	0219	7	GD/1.5	0/E	99	86	GS
228	/84	105	106	4	0220	7	GD/1.5	O/E	99	75	GP
229.11	/84	107	108	4	0221a	6	GD/1	O/E	99	88	S
229.18	/84	109	110	4	0221b	7	GD/1	50/E	14	61	P
230	/84	111	112	4	0222	7	GD/1.5	70/E	99	82	PG
231	/84	113	114	4	0223	7	PR/1.5	350/E	98	79	PG
232	/84	1	2	5	0224	6	OK/3	200/E	99	86	GS
233	/84	3	4	5	0225	6	OK/2	145/E	99	90	PS
234	/84	5	6	5	0226	7	GD/1.5	0/E	99	68	P
235	/84	ND		NO TAPE							
236	/84	7	8	5	0227	7	GD/1.5	54/E	89	55	PG

Sea Surface Temperature Atlas Catalogue Area E 1984

JUL day	YR	IR no.	VIS no.	Vol	IA#	Sat	Nav. Conf.	Nav. Acc.	%D	% clr	Qual.
237	/84	9	10	5	0228	6	OK/1	52/E	99	92	S
238	/84	11	12	5	0229	6	OK/1	320/H	99	90	GP
239	/84	13	14	5	0230	7	GD/1.5	280/F	99	89	GP
240	/84	15	16	5	0231	7	GD/1	0/E	99	70	PG
241.17	/84	17	18	5	0232	7	GD/2	100/I	80	79	PG
241.19	/84	19	20	5	0233	7	GD/3	48/A	99	78	P
242	/84	21	22	5	0234	7	GD/3	39/E	99	95	G
243	/84	ND		NO TAPE							
244	/84	23	24	5	0235	7	GD/2	121/E	99	76	S
245	/84	25	26	5	0236	7	GD/2	193/F	99	43	P
246	/84	27	28	5	0237	7	OK/3	100/E	99	43	P
247	/84	29	30	5	0238	7	GD/1.5	>512/F	99	55	P
248	/84	31	32	5	0239	7	OK/3	>512/F	93	59	PS
249.12	/84	33	34	5	0240	6	GD/1.5	200/E	99	76	SP
249.18	/84	35	36	5	0241	7	GD/1.5	98/K	81	42	S
250	/84	37	38	5	0242	7	GD/1.5	0/I	65	48	S
251	/84	39	40	5	0243	7	GD/1.5	0/E	99	69	S
252	/84	41	42	5	0244	7	GD/2	0/E	99	78	PG
253	/84	43	44	5	0245	7	GD/1.5	180/E	99	66	PG
254	/84	45	46	5	0246	7	GD/1.5	30/F	99	63	G
255.18	/84	47	48	5	0247	7	GD/1.5	230/F	99	45	PS
255.20	/84	49	50	5	0248	7	GD/3	0/A	99	38	S
256	/84	51	52	5	0249	7	GD/3	23/A	99	48	GS
257	/84	53	54	5	0250	7	GD/1.5	?/?	99	43	P
258	/84	55	56	5	0251	7	GD/2	0/E	99	53	GS
259.22	/84	59	60	5	0252	6	GD/1.5	189/E	99	37	S
259.19	/84	57	58	5	0253	7	OK/1	100/E	99	43	S
260	/84	61	62	5	0254	7	GD/3	300/E	99	47	S
261	/84	63	64	5	0255	7	OK/1	200/F	97	71	GS
262.11	/84	65	66	5	0256	6	OK/3	350/E	99	86	PS
262.18	/84	67	68	5	0257	7	GD/3	0/F	99	57	GP
263	/84	111	112	5	0258	6	OK/2	52/F	99	56	PS
264.19	/84	69	70	5	0259	7	GD/3	17/A	99	47	P
264.22	/84	71	72	5	0260	6	OK/1.5	19/EA	99	45	P
265	/84	73	74	5	0261	7	GD/2	0/A	99	54	S
266	/84	ND		NO TAPE							
267	/84	ND		NO TAPE							
268	/84	75	76	5	0262	7	OK/3	100/E	99	63	GS
269	/84	77	78	5	0264	7	OK/1.5	150/E	99	43	GP
270	/84	79	80	5	0265	7	OK/1.5	50/F	99	34	S
271	/84	81	82	5	0266	7	GD/1	277/F	99	50	S
272.11	/84	83	84	5	0267	6	PR/2	97/F	99	66	PS
272.99	/84	ND			0268	7	BAD TAPE				
273	/84	85	86	5	0269	7	OK/1.5	174/I	83	43	P
274.19	/84	87	88	5	0263	7	OK/1	70/E	99	68	P
274.21	/84	89	90	5	0270	6	OK/3	204/F	98	82	G
275	/84	91	92	5	0271	7	GD/2	0/F	99	43	P
276	/84	93	94	5	0272	7	GD/3	196/E	99	51	P
277	/84	95	96	5	0273	7	GD/3	161/-	58	34	P
278	/84	97	98	5	0274	7	GD/2	238/A	78	18	S
279	/84	99	100	5	0275	7	GD/1	202/F	99	23	P
280	/84	101	102	5	0276	7	OK/3	12/A	99	54	P
281	/84	103	104	5	0277	7	GD/1.5	281/A	99	18	S
282	/84	105	106	5	0278	7	GD/3	0/I	67	41	P

JUL day	YR	IR no.	VIS no.	Vol	IA#	Sat	Nav. Conf.	Nav. Acc.	%D	% clr	Qual.
283	/84	107	108	5	0279	7	GD/3	0/E	99	34	P
284.19	/84	109	110	5	0280	7	OK/3	261/E	99	46	P
284.??	/84	ND			0281	BAD TAPE					
285	/84	1	2	6	0282	7	OK/3	336/B	99	64	GP
286	/84	3	4	6	0283	7	GD/3	391/E	99	76	P
287	/84	ND		NO TAPE							
288	/84	ND		NO TAPE							
289	/84	5	6	6	0285	7	GD/3	22/E	99	83	G
290.17	/84	7	8	6	0286	7	OK/2	>512/?	68	74	P
290.19	/84	9	10	6	0287	7	PR/3	0/E	99	84	GP
291	/84	11	12	6	0288	7	OK/3	17/E	99	94	G
292.11	/84	13	14	6	0289	7	PR/3	0/E	99	89	P
292.19	/84	15	16	6	0290	7	PR/3	100/E	99	76	P
293	/84	ND			0291	7	BAD TAPE				
294	/84	17	18	6	0292	7	GD/1	0/F	90	49	P
295	/84	19	20	6	0293	7	OK/3	228/F	99	52	P
296	/84	21	22	6	0294	7	GD/1.5	>512/?	99	50	PS
297	/84	23	24	6	0295	7	PR/2	250/I	84	19	P
298	/84	25	26	6	0296	7	GD/3	0/E	99	57	GP
299	/84	27	28	6	0297	7	OK/3	260/E	99	38	PS
300	/84	29	30	6	0298	7	OK/2	0/E	99	31	PS
301	/84	35	36	6	0299	7	PR/2	0/E	99	34	GP
302	/84	31	32	6	0300	7	OK/3	55/A	73	65	P
303	/84	33	34	6	0301	7	OK/1	229/F	99	66	GP
304.08	/84	37	38	6	0302	7	OK/2	23/F	99	32	G
304.11	/84	39	40	6	0303	6	OK/2	0/E	99	45	G
304.20	/84	41	42	6	0304	7	GD/2	84/A	99	80	G
305.08	/84	77	78	6	0305	7	OK/3	0/F	99	28	G
305.11	/84	43	44	6	0306	6	PR/2	0/F	99	34	P
305.18	/84	45	46	6	0307	7	PR/3	240/F	85	33	P
305.19	/84	47	48	6	0308	7	GD/3	0/A	99	40	GP
306.99	/84	ND			0309	BAD TAPE					
306.17	/84	49	50	6	0310	7	OK/2	35/K	69	28	P
306.19	/84	51	52	6	0311	7	GD/1.5	0/A	97	69	P/OI
307	/84	ND		NO TAPE							
308	/84	53	54	6	0312	7	PR/3	12/A	99	43	P
309	/84	55	56	6	0313	7	PR/3	0/E	99	60	P
310	/84	57	58	6	0314	7	PR/3	157/H	99	16	P
311	/84	59	60	6	0315	7	PR/3	189/F	99	37	P
312	/84	61	62	6	0316	7	OK/3	0/A?	99	32	PS
313	/84	63	64	6	0317	7	OK/3	0/E	99	45	G
314	/84	65	66	6	0318	7	OK/3	0/A	99	39	GP
315	/84	67	68	6	0319	7	OK/2	170/B	99	25	P
316	/84	ND			0320	BAD TAPE					
317	/84	69	70	6	0321	7	PR/3	0/F	99	20	P
318	/84	ND			0322	BAD TAPE					
319	/84	ND		NO TAPE							
320	/84	71	72	6	0323	7	OK/1.5	0/M	99	21	P
321	/84	73	74	6	0324	7	PR/3	316/A	99	9	S
322	/84	75	76	6	0325	7	?/1	>512/F	71	21	P
323	/84	79	80	6	0326	7	OK/1.5	0/A	99	7	S
324	/84	81	82	6	0327	7	OK/2	0/A	99	8	S
325	/84	83	84	6	0328	7	PR/3	31/E	99	6	S
326	/84	85	86	6	0329	7	PR/3	35/F	99	19	P

JUL day	YR	IR no.	VIS no.	Vol	IA#	Sat	Nav. Conf.	Nav. Acc.	%D	% clr	Qual.
327	/84	87	88	6	0330	7	OK/3	192/F	99	16	P
328	/84	89	90	6	0331	7	OK/3	0/F	99	1	S
329	/84	91	92	6	0332	7	PR/3	0/A	99	18	S
330	/84	93	94	6	0333	7	GD/2	0/A	99	12	P
331	/84	95	96	6	0334	7	OK/2	122/A	99	30	P
332	/84	97	98	6	0335	7	OK/3	463/F	99	34	P
333	/84	99	100	6	0336	7	PR/3	238/E	99	37	P
334	/84	101	102	6	0337	7	OK/1.5	184/?	69	14	S
335	/84	103	104	6	0338	7	GD/1.5	63/A	88	25	P
336	/84	ND		NO TAPE							
337	/84	105	106	6	0339	7	PR/1.5	298/I	88	6	S
337	/84	107	108	6	0340	6	PR/3	58/A	99	1	S
338	/84	109	110	6	0341	7	OK/1.5	0/A	99	18	P
339	/84	111	112	6	0342	7	GD/2	25/A	99	18	P
340	/84	ND		NO TAPE							
341	/84	ND		NO TAPE							
342	/84	ND		NO TAPE							
343	/84	113	114	6	0343	7	GD/3	83/A	88	0	S
344.20	/84	115	116	6	0344	7	OK/3	60/A	99	12	P
344.22	/84	1	2	7	0345	6	OK/3	0/F	99	10	PS
345	/84	3	4	7	0346	7	GD/3	>512/?	89	11	S
346	/84	5	6	7	0347	7	GD/3	18/E	99	15	P
347	/84	ND			0348	BAD TAPE					
348	/84	7	8	7	0349	7	GD/3	>512/?	99	19	P
349	/84	9	10	7	0350	7	OK/3	58/E	99	12	P
350	/84	ND			0351	BAD TAPE					
351	/84	ND			0352	BAD TAPE					
352	/84	11	12	7	0353	7	GD/3	58/A	99	29	P
353.08	/84	13	14	7	0354	7	0/1	0/E	99	16	P
353.18	/84	15	16	7	0355	7	GD/3	>512/?	90	2	S
354	/84	17	18	7	0356	7	GD/3	>512/?	99	8	P
355	/84	ND			0357	BAD TAPE					
356	/84	ND			0358	BAD TAPE					
357	/84	19	20	7	0359	7	0/1.5	?/?	99	2	S
358.18	/84	21	22	7	0360	7	GD/3	98/E	99	19	P
358.21	/84	23	24	7	0361	7	PR/2	>512/E	93	22	P
359	/84	25	26	7	0362	7	GD/3	224/H	99	12	P
360	/84	ND			0363	BAD TAPE					
361.18	/84	27	28	7	0364	7	GD/3	>512/?	91	1	S
361.19	/84	29	30	7	0365	7	GD/3	0/A	99	1	S
362.18	/84	31	32	7	0366	7	GD/3	92/K	78	1	S
362.19	/84	33	34	7	0367	7	GD/3	0/A	99	3	S
363.17	/84	35	36	7	0368	9	GD/3	76/B	99	1	0
363.19	/84	37	38	7	0369	7	GD/2	90/E	99	3	S
364	/84	39	40	7	0370	9	GD/2	198/A?	61	1	S
365.18	/84	41	42	7	0371	9	GD/2	74/?	77	3	S
365.22	/84	43	44	7	0372	6	OK/3	20/F	99	4	S
366.12	/84	45	46	7	0373	6	OK/3	0/E	99	6	S
366.17	/84	47	48	7	0374	9	GD/2	91/F	99	2	S

JUL day	YR	IR no.	VIS no.	Vol	IA#	Sat	Nav. Conf.	Nav. Acc.	%D	% clr	Qual.
001	/85	49	50	7	0375	7	OK/3	72/F	99	1	S
002	/85	51	52	7	0376	7	OK/3	?/?	98	2	S
003	/85	53	54	7	0377	7	GD/3	?/?	91	7	S
004	/85	55	56	7	0378	7	GD/3	?/?	78	7	PS
005	/85	57	58	7	0379	7	OK/3	30/E	99	1	S
006	/85	59	60	7	0380	7	GD/3	5/B	99	3	S
007	/85	61	62	7	0381	7	GD/3	174/B	99	5	S
008	/85	ND		NO TAPE							
009	/85	63	64	7	0382	9	GD/3	0/F	99	0	0
010	/85	65	66	7	0383	9	GD/3	225/F	99	1	S
011	/85	67	68	7	0384	9	GD/3	?/?	95	3	S
012	/85	69	70	7	0385	9	GD/3	?/?	86	0	S
013	/85	71	72	7	0386	9	GD/3	0/A	99	1	S
014	/85	ND			0387	BAD	TAPE				
015	/85	73	74	7	0388	9	GD/2	?/?	99	74	P
016	/85	75	76	7	0389	9	GD/3	?/?	99	0	S
017	/85	77	78	7	0390	9	GD/3	130/E	99	1	S
018	/85	79	80	7	0391	9	GD/3	54/F	99	1	S
019	/85	81	82	7	0392	9	OK/3	145/F	99	5	S
020	/85	83	84	7	0393	9	OK/1.5	?/?	99	1	S
021	/85	85	86	7	0394	9	GD/3	88/A	99	1	S
022	/85	87	88	7	0395	9	GD/2	?/?	79	1	S
023	/85	89	90	7	0396	9	OK/3	0/K	64	0	0
024	/85	91	92	7	0397	9	GD/2	40/E	99	4	S
025	/85	ND			0398	BAD	TAPE				
026	/85	93	94	7	0399	9	OK/2	0/E	99	1	S
027	/85	95	96	7	0400	9	GD/3	0/F	99	1	S
028	/85	97	98	7	0401	9	GD/2	329/F	99	1	S
029	/85	99	100	7	0402	9	OK/3	265/F	99	2	S
030	/85	101	102	7	0403	9	GD/3	14/A	59	1	S
031.16	/85	103	104	7	0404	9	GD/3	?/?	84	5	S
031.18	/85	105	106	7	0405	9	GD/1.5	10/E	99	5	S
032	/85	107	108	7	0406	9	GD/1.5	50/K	70	1	S
033	/85	109	110	7	0407	9	GD/1	28/J	52	0	0
034	/85	ND			0408	BAD	TAPE				
035	/85	111	112	7	0409	9	OK/3	50/E	99	1	S
036	/85	1	2	8	0410	9	OK/3	0/F	99	0	0
037	/85	3	4	8	0411	9	OK/3	0/F	99	0	S
038	/85	5	6	8	0412	9	OK/2	163/F	99	0	0
039	/85	113	114	7	0413		GD/3	?/?	96	0	
040	/85	7	8	8	0414	9	OK/2	164/A	99	1	S
041	/85	9	10	8	0415	9	OK/1.5	100/K	75	4	S
042	/85	11	12	8	0416	9	GD/2	0/E	99	15	P
043	/85	13	14	8	0417	9	OK/2	0/E	99	6	S
044	/85	15	16	8	0418	9	OK/1.5	0/H	99	0	0
045	/85	17	18	8	0419	9	OK/2	?/?	99	6	S
046	/85	19	20	8	0420	9	GD/2	?/?	99	3	S
047	/85	21	22	8	0421	9	GD/2	?/?	99	9	S
048	/85	23	24	8	0422	9	PR/3	370/H	98	8	S
049	/85	25	26	8	0423	9	PR/3	?/?	91	9	S
050	/85	27	28	8	0424	9	OK/3	200/I	80	7	S
051	/85	29	30	8	0425	9	OK/3	0/E	99	2	S
052	/85	31	32	8	0426	9	OK/3	0/E	99	2	S

Sea Surface Temperature Atlas Catalogue Area E 1985

JUL day	YR	IR no.	VIS no.	Vol	IA#	Sat	Nav. Conf.	Nav. Acc.	%D	% clr	Qual.
053	/85	33	34	8	0427	9	OK/3	0/H	99	0	S
054	/85	ND			0428	BAD	TAPE				
055	/85	35	36	8	0429	9	OK/1.5	77/E	99	0	0
056	/85	37	38	8	0430	9	OK/3	32/E	99	0	0
057	/85	ND			0431	BAD	TAPE				
058	/85	39	40	8	0432	9	OK/1.5	?/?	95	0	0
059	/85	41	42	8	0433	9	OK/3	23/E	99	1	S
060	/85	43	44	8	0434	9	0K/3	?/?	73	3	S
061	/85	45	46	8	0435	9	GD/2	67/I	57	0	0
062	/85	47	48	8	0436	9	OK/3	112/E	99	4	S
063	/85	49	50	8	0437	9	OK/3	125/E	99	0	0
064	/85	51	52	8	0438	9	OK/1	>512/F	60	0	S
065	/85	53	54	8	0439	9	PR/3	0/F	99	0	S
066	/85	55	56	8	0440	9	OK/3	222/F	99	1	S
067	/85	57	58	8	0441	9	OK/3	<512/F	97	0	0
068	/85	59	60	8	0442	9	OK/2	59/A	99	11	P
069	/85	61	62	8	0443	9	OK/2	?/?	78	12	S
070.16	/85	63	64	8	0444	9	OK/3	200/J	64	13	S
070.18	/85	65	66	8	0445	9	0K/3	73/A	99	22	P
071	/85	67	68	8	0446	9	OK/3	>512/F	99	1	0
072	/85	69	70	8	0447	9	GD/3	260/E	99	3	S
073	/85	71	72	8	0448	9	GD/1	180/F	99	11	S
074	/85	73	74	8	0449	9	OK/3	>512/A	99	6	S
075	/85	ND		NO TAPE							
076	/85	75	76	8	0450	9	OK/3	380/F	99	12	S
077	/85	77	78	8	0451	9	PR/3	?/?	93	5	S
078.16	/85	79	80	8	0452	9	GD/3	>512/F	84	4	S
078.18	/85	81	82	8	0453	9	GD/3	69/A	99	8	S
079	/85	83	84	8	0454	9	GD/3	44/K	72	11	S
080	/85	85	86	8	0455	9	OK/3	57/E	99	1	S
081	/85	87	88	8	0456	9	GD/3	117/A	99	12	S
082	/85	89	90	8	0457	9	OK/3	120/E	99	24	P
083	/85	91	92	8	0458	9	OK/3	150/F	99	20	S
084	/85	93	94	8	0459	9	OK/3	134/F	99	13	S
085.17	/85	95	96	8	0461	9	OK/3	235/F	99	7	S
085.18	/85	97	98	8	0460	9	GD/2	0/A	95	11	S
086	/85	99	100	8	0462	9	GD/3	23/A	99	33	GP
087.16	/85	101	102	8	0463	9	GD/1	306/I	89	21	P
087.18	/85	103	104	8	0464	9	GD/1.5	187/A	99	20	S
088.06	/85	105	106	8	0465	9	GD/1.5	0/E	99	1	0
088.18	/85	107	108	8	0466	9	OK/2	32/A	99	27	PS
089	/85	109	110	8	0467	9	GD/1	25/I	64	0	0
090	/85	111	112	8	0468	9	GD/3	58/E	99	18	S
091	/85	1	2	9	0469	9	GD/3	359/E	99	3	S
092	/85	3	4	9	0470	9	OK/3	105/F	99	0	S
093	/85	5	6	9	0471	9	GD/3	63/F	99	15	P
094.17	/85	7	8	9	0472	9	OK/3	145/F	99	4	S
094.18	/85	9	10	9	0473	9	GD/3	0/<E	89	4	S
095	/85	11	12	9	0474	9	GD/2	400/F	98	20	P
096	/85	13	14	9	0475	9	GD/3	?/?	93	7	S
097	/85	15	16	9	0476	9	GD/3	0/A	99	32	S
098	/85	17	18	9	0477	9	OK/1.5	103/K	70	13	S
099	/85	19	20	9	0478	9	GD/3	170/E	99	19	S
100	/85	21	22	9	0479	9	GD/3	0/A	99	22	S

JUL day	YR	IR no.	VIS no.	Vol	IA#	Sat	Nav. Conf.	Nav. Acc.	%D	% clr	Qual.
101	/85	23	24	9	0480	9	GD/3	100/E	99	12	S
101	/85	NA			0481	SAME	AS	ABOVE			
102	/85	ND			0482	9	BAD	TAPE			
103	/85	25	26	9	0483	9	OK/3	73/F	99	8	S
104	/85	27	28	9	0484	9	GD/3	280/F	99	25	P
105	/85	29	30	9	0485	9	GD/1.5	?/?	96	11	S
106	/85	31	32	9	0486	9	GD/2	?/?	89	24	S
107	/85	33	34	9	0487	9	GD/3	85/K	78	10	S
108	/85	35	36	9	0488	9	GD/3	19/E	99	27	P
109	/85	ND			0489	BAD	TAPE				
110	/85	37	38	9	0490	9	GD/3	60/E	99	44	P
111	/85	39	40	9	0491	9	GD/3	54/F	99	56	G
112	/85	41	42	9	0492	9	GD/3	53/F	99	61	GP
113	/85	43	44	9	0493	9	GD/2	120/F	99	50	P
114	/85	45	46	9	0494	9	GD/2	?/?	98	65	P
115	/85	47	48	9	0495	9	GD/2	340/E	99	12	P
116	/85	49	50	9	0496	9	GD/3	154/K	83	21	P
117	/85	51	52	9	0497	9	GD/3	0/K	70	31	P
118	/85	53	54	9	0498	9	GD/3	0/E	99	48	GP
119	/85	ND			0499	BAD	TAPE				
120	/85	55	56	9	0500	9	GD/3	0/E	99	41	S
121	/85	57	58	9	0501	9	GD/3	68/E	99	27	P
122	/85	59	60	9	0502	9	GD/3	0/F	99	33	P
123	/85	61	62	9	0503	9	OK/1.5	282/F	99	44	P
124	/85	63	64	9	0504	9	GD/3	0/A	66	33	P
125	/85	65	66	9	0505	9	GD/3	184/K	87	40	P
126	/85	67	68	9	0506	9	GD/3	0/E	99	72	G
127	/85	69	70	9	0507	9	GD/3	223/E	99	22	S
128	/85	71	72	9	0508	9	GD/3	?/?	99	20	S
129	/85	73	74	9	0509	9	GD/3	65/E	99	41	P
130	/85	75	76	9	0510	9	GD/3	302/E	99	21	S
131	/85	77	78	9	0511	9	GD/3	42/F	99	46	P
132	/85	79	80	9	0512	9	GD/3	121/F	99	51	P
133	/85	81	82	9	0513	9	GD/3	?/?	98	42	P
134	/85	83	84	9	0514	9	GD/1.5	250/K	91	68	P
135.16	/85	85	86	9	0515	9	GD/2	125/K	81	53	GP
135.18	/85	87	88	9	0516	9	GD/3	0/E	99	60	GP
136	/85	89	90	9	0517	9	GD/3	51/A	99	34	S
137	/85	91	92	9	0518	9	GD/2	104/E	99	16	S
138	/85	93	94	9	0519	9	GD/1	0/E	28	71	P
139	/85	95	96	9	0520	9	GD/3	0/E	99	64	P
140	/85	97	98	9	0521	9	GD/2	91/F	99	61	GP
141	/85	99	100	9	0522	9	GD/1.5	40/F	99	55	GP
142	/85	101	102	9	0523	9	GD/1.5	262/F	99	41	S
143	/85	103	104	9	0524	9	GD/3	?/?	94	50	GP
144	/85	105	106	9	0525	9	GD/1	170/K	85	57	P
145	/85	107	108	9	0526	9.	GD/3	170/K	72	52	P
146	/85	109	110	9	0527	9	GD/3	50/E	99	39	PS
147	/85	111	112	9	0528	9	GD/3	90/E	99	41	S
148	/85	1	2	10	0529	9	GD/3	160/F	99	46	S
149	/85	3	4	10	0530	9	OK/3	0/F	99	56	GP
150	/85	5	6	10	0531	9	OK/3	0/F	99	62	GS
151	/85	7	8	10	0532	9	OK/3	165/F	99	32	S
152	/85	9	10	10	0533	9	OK/2	450/F	96	12	S

JUL day	YR	IR no.	VIS no.	Vol	IA#	Sat	Nav. Conf.	Nav. Acc.	%D	% clr	Qual.
153.16	/85	11	12	10	0534	9	GD/2	260/K	88	42	PS
153.18	/85	13	14	10	0535	9	GD/3	10/A	99	49	GP
154	/85	15	16	10	0536	9	OK/3	?/?	76	44	P
155	/85	17	18	10	0537	9	GD/3	0/A	99	54	PS
156	/85	19	20	10	0538	9	OK/1.5	45/E	99	49	GS
157	/85	21	22	10	0539	9	OK/3	210/E	99	42	S
158	/85	23	24	10	0540	9	OK/3	10/E	99	55	P
159	/85	25	26	10	0541	9	OK/3	20/F	99	68	P
160	/85	27	28	10	0542	9	PR/3	120/F	99	77	S
161	/85	29	30	10	0543	9	OK/3	>512/?	98	29	S
162	/85	31	32	10	0544	9	OK/3	313/K	91	22	S
163	/85	33	34	10	0545	9	OK/3	?/?	81	43	P
164	/85	35	36	10	0546	9	OK/3	?/?	99	55	GP
165	/85	37	38	10	0547	9	GD/2	150/K	47	17	S
166	/85	39	40	10	0548	9	OK/3	0/E	98	61	SP
167	/85	41	42	10	0549	9	OK/3	0/E	99	63	GS
168	/85	43	44	10	0550	6	PR/3	170/F	98	47	PS
169	/85	45	46	10	0551	9	OK/2	65/F	99	43	P
170	/85	47	48	10	0552	9	OK/1.5	307/E	99	26	S
171	/85	49	50	10	0553	9	PR/3	?/?	94	48	P
172	/85	51	52	10	0554	9	PR/3	?/?	85	69	PS
173	/85	53	54	10	0555	9	OK/3	0/A	99	92	GS
174	/85	55	56	10	0556	9	OK/3	0/A	99	78	PS
175	/85	57	58	10	0557	9	OK/3	94/E	99	73	PS
176	/85	59	60	10	0558	9	PR/3	34/E	99	62	PG
177	/85	61	62	10	0559	9	OK/3	0/E	99	92	G
178	/85	63	64	10	0560	9	PR/1.5	22/F	99	82	P
179	/85	65	66	10	0561	9	PR/3	118/F	99	91	G
180	/85	67	68	10	0562	9	PR/1.5	364/F	97	47	P
181	/85	69	70	10	0563	9	PR/3	?/?	89	68	GP
182	/85	71	72	10	0564	9	PR/2	150/I	78	78	PS
183	/85	73	74	10	0565	9	OK/2	0/I	63	82	GP
184	/85	75	76	10	0566	9	PR/3	0/E	99	62	S
185	/85	77	78	10	0567	9	PR/3	0/F	99	67	P
186	/85	79	80	10	0568	9	PR/3	31/E	99	86	GS
187	/85	81	82	10	0569	9	OK/3	0/F	99	76	GS
188	/85	83	84	10	0570	9	PR/1.5	14/F	99	39	P
189	/85	85	86	10	0571	9	PR/3	?/?	98	60	P
190	/85	87	88	10	0572	9	OK/3	0/A	99	80	GS
191	/85	89	90	10	0573	9	PR/3	?/?	82	66	P
192	/85	91	92	10	0574	9	PR/2	62/I	69	37	S
193	/85	93	94	10	0575	9	OK/3	53/E	99	80	GP
194	/85	95	96	10	0576	9	PR/3	50/E	99	63	PS
195	/85	97	98	10	0577	9	PR/3	10/E	99	33	P
196	/85	99	100	10	0578	9	PR/3	162/F	99	71	S
197	/85	101	102	10	0579	9	PR/3	?/?	99	45	S
198	/85	103	104	10	0580	9	OK/3	170/F	99	69	PS
199	/85	105	106	10	0581	9	OK/3	?/?	95	53	P
200	/85	107	108	10	0582	9	OK/3	?/?	87	33	SP
201	/85	109	110	10	0583	9	OK/3	110/I	75	66	S
201	/85	NA			0584	SAME AS		ABOVE			
202.16	/85	111	112	10	0585	9	OK/2	90/I	60	56	PS
202.18	/85	113	114	10	0586	9	PR/3	90/E	99	75	GP
203	/85	1	2	11	0587	9	OK/3	0/E	99	36	S

JUL day	YR	IR no.	VIS no.	Vol	IA#	Sat	Nav. Conf.	Nav. Acc.	%D	% clr	Qual.
204	/85	3	4	11	0588	9	OK/3	90/E	99	67	S
205	/85	5	6	11	0589	9	PR/3	0/E	99	51	P
206	/85	7	8	11	0590	9	PR/3	0/F	99	37	S
207	/85	9	10	11	0591	9	OK/3	63/F	99	55	G
208	/85	11	12	11	0592	9	0K/3	?/?	98	64	P
209	/85	13	14	11	0593	9	PR/3	?/?	92	66	G
210	/85	15	16	11	0594	9	GD/1.5	0/F	99	66	P
211	/85	17	18	11	0595	9	OK/3	89/E	99	77	G
212	/85	19	20	11	0596	9	OK/3	34/E	99	65	PS
213	/85	ND		NO TAPE							
214	/85	21	22	11	0597	9	OK/3	42/E	99	79	P
215	/85	23	24	11	0598	9	OK/3	0/F	99	88	G
216.17	/85	25	26	11	0599	9	GD/3	70/F	99	73	G
216.18	/85	27	28	11	0600	9	GD/3	0/A	83	73	P
217	/85	29	30	11	0601	9	GD/3	209/F	99	73	GS
218	/85	31	32	11	0602	9	GD/3	?/?	95	81	P
219	/85	33	34	11	0603	9	GD/3	36/E	99	69	P
220.16	/85	35	36	11	0604	9	GD/1.5	68/I	75	78	G
220.18	/85	37	38	11	0605	9	GD/3	?/?	99	64	P
221	/85	39	40	11	0606	9	GD/3	5/E	99	71	P
222	/85	41	42	11	0607	9	GD/1.5	0/E	99	91	P
223	/85	43	44	11	0608	9	GD/3	135/E	99	84	P
224	/85	45	46	11	0609	9	GD/3	156/F	99	65	PS
225.17	/85	47	48	11	0610	9	GD/3	79/F	99	63	P
225.19	/85	49	50	11	0611	9	GD/3	17/A	44	68	P
226	/85	51	52	11	0612	9	GD/3	142/F	99	74	P
227	/85	53	54	11	0613	9	GD/3	37/A	66	70	P
228	/85	55	56	11	0614	9	GD/3	174/E	99	50	S
229	/85	57	58	11	0615	9	GD/3	0/A	99	60	P
230	/85	59	60	11	0616	9	GD/3	0/I	67	79	P
231	/85	61	62	11	0617	9	GD/3	0/E	99	77	G
232	/85	63	64	11	0618	9	GD/3	?/?	99	49	P
233	/85	65	66	11	0619	9	OK/3	0/E	99	68	P
234	/85	67	68	11	0620	9	GD/3	0/E	99	73	P
235	/85	69	70	11	0621	9	GD/3	59/E	99	59	S
236	/85	71	72	11	0622	9	GD/3	?/?	99	73	PS
237	/85	73	74	11	0623	9	GD/3	?/?	95	84	P
238	/85	75	76	11	0624	9	GD/3	?/?	86	90	G
239	/85	77	78	11	0625	9	GD/3	63/I	74	61	P
240	/85	79	80	11	0626	9	GD/3	70/A	99	43	S
241	/85	81	82	11	0627	9	GD/3	130/E	99	55	P
242	/85	83	84	11	0628	9	GD/3	45/E	99	65	P
243	/85	85	86	11	0629	9	GD/3	28/E	99	65	P
244	/85	87	88	11	0630	9	GD/3	0/E	99	76	P
245	/85	89	90	11	0631	9	GD/3	182/F	99	31	S
246	/85	91	92	11	0632	9	GD/3	?/?	97	67	P
247	/85	93	94	11	0633	9	GD/3	220/I	90	25	S
248	/85	95	96	11	0634	9	GD/2	60/A	99	48	PS
249	/85	97	98	11	0635	9	GD/3	0/I	65	75	PS
250	/85	99	100	11	0636	9	GD/3	0/E	99	52	P
251	/85	101	102	11	0637	9	GD/3	40/E	99	60	GS
252	/85	103	104	11	0638	9	GD/1	>512/E	63	37	P
253	/85	ND		NO TAPE							
254	/85	ND		NO TAPE							

JUL day	YR	IR no.	VIS no.	Vol	IA#	Sat	Nav. Conf.	Nav. Acc.	%D	% clr	Qual.
255	/85	ND		NO TAPE							
256	/85	ND		NO TAPE							
257	/85	105	106	11	0639	9	GD/3	17/E	99	53	P
258	/85	107	108	11	0640	9	GD/3	0/A	99	72	P
259	/85	ND		NO TAPE							
260	/85	ND		NO TAPE							
261	/85	109	110	11	0641	9	GD/3	0/F	99	82	P
262.11	/85	111	112	11	0643	8	GD/1	>512/F	67	84	P
262.17	/85	113	114	11	0642	9	GD/2	75/F	99	79	P
263	/85	1	2	12	0644	9	GD/1.5	0/E	85	46	P
264	/85	3	4	12	0645	9	GD/1.5	193/E	99	76	GP
265	/85	5	6	12	0646	9	GD/3	?/?	96	81	P
266	/85	7	8	12	0647	9	GD/2	260/I	88	63	P
267	/85	9	10	12	0648	9	GD/3	9/A	99	83	PS
268	/85	11	12	12	0649	9	GD/3	220/E	99	65	P
269	/85	13	14	12	0650	9	GD/3	0/E	99	90	P
270	/85	15	16	12	0651	9	GD/3	38/E	99	24	P
271	/85	17	18	12	0652	9	GD/2	326/E	99	63	P
272	/85	19	20	12	0653	9	GD/2	0/F	99	54	PS
273	/85	21	22	12	0654	9	GD/3	69/A	94	28	P
274	/85	23	24	12	0655	9	GD/3	?/?	98	47	P
275	/85	25	26	12	0656	9	GD/3	?/?	91	20	P
276	/85	27	28	12	0657	9	GD/3	0/E	99	71	PS
277	/85	29	30	12	0658	9	GD/3	0/I	66	66	P
278	/85	31	32	12	0659	9	GD/1.5	32/E	99	60	P
279	/85	33	34	12	0660	9	GD/0	?/F	80	8	P
280	/85	35	36	12	0661	9	GD/1	43/E	99	46	P
281	/85	37	38	12	0662	9	GD/2	0/F	99	52	PS
282	/85	39	40	12	0663	9	GD/3	?/?	99	19	S
283	/85	41	42	12	0664	9	GD/3	247/F	99	6	S
284	/85	43	44	12	0665	9	GD/3	?/?	94	5	S
285	/85	45	46	12	0666	9	GD/2	226/I	84	7	S
286	/85	47	48	12	0667	9	GD/3	54/I	71	44	P
287	/85	49	50	12	0668	9	GD/3	274/A	99	30	P
288	/85	ND			0669	BAD	TAPE				
289	/85	51	52	12	0670	9	GD/2	24/E	99	49	P
290	/85	53	54	12	0671	9	GD/2	16/F	99	35	P
291	/85	55	56	12	0672	9	GD/3	22/F	99	42	P
292	/85	57	58	12	0673	9	GD/3	?/?	99	38	GP
293	/85	ND		NO TAPE							
294	/85	59	60	12	0674	9	GD/3	28/E	99	32	GP
295	/85	61	62	12	0675	9	GD/3	111/E	99	39	P
296.16	/85	63	64	12	0676A	9	GD/3	44/I	60	59	P
296.18	/85	65	66	12	0676B	9	GD/2	20/A	55	86	GP
297	/85	67	68	12	0677	9	GD/3	0/E	99	42	P
298	/85	69	70	12	0678	9	GD/2	269/E	99	35	P
299	/85	71	72	12	0679	9	GD/2	270/F	99	24	P
300	/85	73	74	12	0680	9	GD/2	55/F	99	30	P
301	/85	75	76	12	0681	9	GD/2	22/A	88	6	S
302	/85	77	78	12	0682	9	GD/2	0/A	99	21	P
303	/85	79	80	12	0683	9	GD/2	?/?	91	7	S
304	/85	81	82	12	0684	9	GD/3	21/E	99	33	P
305	/85	83	84	12	0685	9	GD/2	108/M	94	8	S
306	/85	85	86	12	0686	9	GD/3	35/E	99	59	P

JUL day	YR	IR no.	VIS no.	Vol	IA#	Sat	Nav. Conf.	Nav. Acc.	%D	% clr	Qual.
307	/85	87	88	12	0687	9	GD/1	40/E	99	74	P
308	/85	89	90	12	0688	9	GD/2	0/E	99	78	GP
309	/85	91	92	12	0689	9	GD/1.5	50/F	99	6	S
310	/85	93	94	12	0690	9	GD/1	74/F	99	11	P
311	/85	95	96	12	0691	9	GD/3	28/A	99	16	P
312	/85	97	98	12	0692	9	GD/3	0/A	99	19	S
313	/85	99	100	12	0693	9	GD/3	95/E	99	28	PS
314	/85	101	102	12	0694	9	GD/3	?/?	99	2	S
315	/85	103	104	12	0695	9	GD/3	36/E	99	17	GP
316	/85	105	106	12	0696	9	GD/3	20/E	99	13	P
317	/85	107	108	12	0697	9	GD/1.5	77/E	99	2	S
318	/85	109	110	12	0698	9	GD/3	20/E	99	20	P
319	/85	111	112	12	0699	9	GD/3	18/F	99	5	S
320	/85	113	114	12	0700	9	GD/2	160/F	99	12	S
321	/85	115	116	12	0701	9	GD/3	150/A	99	11	S
322	/85	1	2	13	0702	9	GD/3	0/A	99	20	PS
323	/85	3	4	13	0703	9	GD/1.5	?/M	99	0	0
324	/85	5	6	13	0704	9	GD/3	0/J	62	0	0
325	/85	7	8	13	0705	9	GD/2	89/E	99	24	P
326	/85	9	10	13	0706	9	GD/3	8/E	99	17	P
327	/85	11	12	13	0707	9	GD/2	20/E	99	7	S
328	/85	13	14	13	0708	9	GD/1.5	27/F	99	11	P
329	/85	15	16	13	0709	9	GD/3	40/F	99	3	S
330	/85	17	18	13	0710	9	GD/2	308/F	98	7	P
331	/85	19	20	13	0711	9	GD/2	?/F	92	11	P
332	/85	21	22	13	0712	9	GD/2	184/I	82	10	P
333	/85	23	24	13	0713	9	GD/2	0/K	69	7	P
334	/85	ND		NO TAPE							
335	/85	25	26	13	0714	9	GD/3	0/E	99	16	P
336	/85	27	28	13	0715	9	GD/3	100/H	99	3	S
337	/85	29	30	13	0716	9	GD/1.5	126/F	99	4	S
338	/85	31	32	13	0717	9	GD/1	233/E	99	7	S
339	/85	33	34	13	0718	9	GD/1.5	188/F	99	9	P
340	/85	35	36	13	0719A	9	GD/1	403/F	71	10	P
341	/85	37	38	13	0719B	9	GD/3	47/A	67	7	S
342	/85	39	40	13	0720	9	GD/2	8/E	99	9	S
343	/85	41	42	13	0721A	9	GD/1	0/K	61	2	S
344	/85	43	44	13	0721B	9	GD/2	260/A	52	6	S
345	/85	45	46	13	0722A	9	GD/2	74/E	73	8	S
346	/85	47	48	13	0722B	9	GD/1	41/E	99	0	S
347	/85	49	50	13	0723	9	GD/3	25/F	99	8	S
348	/85	51	52	13	0724	9	GD/1.5	263/E	99	1	S
349	/85	53	54	13	0725	9	GD/3	386/F	98	5	S
350	/85	55	56	13	0726	9	GD/2	?/?	91	7	S
351	/85	57	58	13	0727	9	GD/2	140/K	81	4	S
352	/85	59	60	13	0728	9	OK/1.5	20/K	68	3	S
353	/85	61	62	13	0729	9	GD/3	55/E	99	3	S
354	/85	63	64	13	0730	9	GD/3	10/E	99	5	S
355	/85	65	66	13	0731	9	GD/1	300/F	99	0	S
356	/85	67	68	13	0732	9	GD/3	135/F	99	3	S
357	/85	69	70	13	0733	9	OK/2	16/F	99	0	0
358	/85	71	72	13	0734	9	GD/3	124/A	99	4	S
359	/85	73	74	13	0735	9	GD/1.5	?/?	95	0	S
360	/85	75	76	13	0736	9	GD/2	?/?	86	3	S

JUL day	YR	IR no.	VIS no.	Vol	IA#	Sat	Nav. Conf.	Nav. Acc.	%D	% clr	Qual.
361	/85	77	78	13	0737	9	GD/1.5	?/?	73	9	S
362	/85	79	80	13	0738	9	GD/2	54/E	99	11	P
363	/85	81	82	13	0739	9	GD/3	77/E	99	9	S
364	/85	83	84	13	0740	9	GD/3	208/H	99	3	S
365	/85	85	86	13	0747	9	OK/3	252/F	99	3	S

JUL day	YR	IR no.	VIS no.	Vol	IA#	Sat	Nav. Conf.	Nav. Acc.	%D	% clr	Qual.
001	/86	87	88	13	0748	9	GD/3	?/?	99	4	S
002	/86	89	90	13	0749	9	GD/1.5	210/F	99	6	S
003	/86	91	92	13	0750	9	OK/1.5	?/?	97	4	S
004	/86	93	94	13	0751	9	GD/3	39/E	99	0	S
005	/86	95	96	13	0752	9	GD/3	?/?	99	1	S
006	/86	97	98	13	0753	9	GD/1	40/I	65	0	S
007	/86	99	100	13	0754	9	GD/3	45/A	99	2	S
008	/86	101	102	13	0755	9	GD/1.5	150/E	99	3	0
009	/86	103	104	13	0756	9	GD/1.5	150/E	99	0	0
010	/86	105	106	13	0757	9	GD/2	10/F	99	2	S
011	/86	107	108	13	0758	9	GD/1.5	355/F	99	2	S
012	/86	109	110	13	0759	9	GD/3	296/F	98	4	S
013	/86	111	112	13	0760	9	GD/3	?/?	93	0	0
014	/86	1	2	14	0761	9	GD/1	135/K	83	4	S
015	/86	3	4	14	0762	9	GD/1	?/?	70	0	0
016	/86	5	6	14	0763	9	GD/2	137/A	99	2	S
017	/86	7	8	14	0764	9	GD/2	27/E	99	5	S
018	/86	9	10	14	0765	9	GD/3	216/E	99	11	S
019	/86	11	12	14	0766	9	OK/3	72/E	99	11	S
020	/86	13	14	14	0767	9	GD/1.5	258/I	99	9	P
021	/86	15	16	14	0768	9	GD/3	?/?	99	2	S
022	/86	17	18	14	0769	9	GD/1.5	?/?	95	0	0
023	/86	19	20	14	0770	9	GD/3	0/E	99	3	S
024	/86	21	22	14	0771	9	GD/1.5	340/J	75	0	0
025	/86	23	24	14	0772	9	GD/1.5	55/A	99	3	S
026	/86	25	26	14	0773	9	GD/1	370/E	99	0	0
027	/86	27	28	14	0774	9	OK/1	?/?	99	6	S
028	/86	29	30	14	0775	9	GD/1	?/?	99	15	P
029	/86	31	32	14	0776	9	GD/1.5	0/F	99	8	S
030	/86	33	34	14	0777	9	GD/3	230/E	99	0	S
031	/86	35	36	14	0778	9	GD/3	?/?	97	0	0
032	/86	37	38	14	0779	9	GD/3	?/?	90	0	0
033	/86	39	40	14	0780	9	GD/3	310/J	79	0	0
034	/86	41	42	14	0781	9	GD/3	0/E	99	1	0
035	/86	43	44	14	0782	9	GD/3	0/E	99	1	0
036	/86	45	46	14	0783	9	GD/1.5	245/E	99	0	0
037	/86	47	48	14	0784	9	OK/3	114/F	99	1	0
038	/86	49	50	14	0785	9	GD/2	101/A	41	8	S
039.17	/86	51	52	14	0786B	9	GD/1	?/A	99	6	S
039.17	/86	53	54	14	0786A	9	GD/1	?/E	99	6	S
040	/86	55	56	14	0787	9	GD/3	283/F	98	4	S
041	/86	57	58	14	0788	9	GD/3	?/?	92	7	S
042	/86	59	60	14	0789	9	GD/1.5	221/J	82	6	S
043	/86	61	62	14	0790	9	GD/1.5	39/J	69	1	S
044	/86	63	64	14	0791	9	GD/3	117/A	99	2	S
045	/86	65	66	14	0792	9	GD/2	45/E	84	2	S
046	/86	67	68	14	0793	9	GD/1.5	240/E	99	1	0
047	/86	69	70	14	0794	9	GD/1.5	48/E	99	1	0
048	/86	71	72	14	0795	9	GD/3	0/A	83	6	S
049	/86	73	74	14	0796	9	GD/3	211/F	99	11	S
050	/86	75	76	14	0797	9	GD/3	?/?	95	22	P
051	/86	77	78	14	0798	9	GD/3	206/I	86	25	P
052	/86	79	80	14	0799	9	GD/2	100/I	73	17	S

JUL day	YR	IR no.	VIS no.	Vol	IA#	Sat	Nav. Conf.	Nav. Acc.	%D	% clr	Qual.
053	/86	81	82	14	0800	9	GD/3	107/E	99	2	S
054	/86	83	84	14	0801	9	GD/2	87/E	99	0	S
055	/86	ND			0802	BAD	TAPE				
056	/86	85	86	14	0803	9	GD/3	171/E	99	5	S
057	/86	87	88	14	0804	9	GD/3	274/E	99	6	S
058	/86	89	90	14	0805	9	GD/1.5	196/F	99	4	S
059	/86	91	92	14	0806	9	GD/3	?/?	97	3	S
060	/86	93	94	14	0807	9	GD/1.5	?/?	89	7	S
061	/86	95	96	14	0808	9	GD/1.5	320/I	77	5	S
062	/86	97	98	14	0809	9	GD/1.5	0/I	62	18	P
063	/86	99	100	14	0810	9	GD/3	0/E	99	31	P
064	/86	101	102	14	0811	9	GD/3	125/E	99	17	S
065	/86	103	104	14	0812	9	GD/3	42/F	99	6	S
066	/86	105	106	14	0813	9	GD/3	0/E	99	1	0
067	/86	107	108	14	0814	9	GD/1.5	200/F	99	2	S
068	/86	109	110	14	0815	9	GD/1.5	268/F	98	1	S
069	/86	111	112	14	0816	9	GD/3	?/?	92	0	S
070	/86	1	2	15	0817	9	GD/3	260/A	99	1	S
071	/86	3	4	15	0818	9	GD/3	182/J	68	3	S
072.16	/86	5	6	15	0819	9	GD/3	0/J	48	4	S
072.18	/86	7	8	15	0820	9	GD/3	37/E	99	6	S
073	/86	9	10	15	0821	9	GD/3	65/H	99	0	0
074	/86	11	12	15	0822	9	GD/3	72/E	99	3	S
075	/86	13	14	15	0823	9	GD/3	0/F	99	6	S
076	/86	15	16	15	0824	9	GD/3	133/F	99	23	P
077	/86	17	18	15	0825	9	GD/3	262/F	99	19	S
078	/86	19	20	15	0826	9	OK/1.5	407/F	94	1	S
079	/86	21	22	15	0827	9	GD/3	243/I	86	7	P
080.16	/86	23	24	15	0828	9	GD/3	83/I	72	2	S
080.18	/86	25	26	15	0829	9	GD/3	90/A	99	4	S
081	/86	27	28	15	0830	9	GD/2	0/A	99	22	P
082	/86	29	30	15	0831	9	GD/2	25/E	99	28	P
083	/86	31	32	15	0832	9	GD/3	119/E	99	13	S
084	/86	33	34	15	0833	9	GD/3	74/F	99	3	S
085	/86	35	36	15	0834	9	GD/3	?/?	99	19	P
086	/86	37	38	15	0835	9	GD/1.5	270/E	99	8	S
087	/86	39	40	15	0836	9	OK/3	?/?	97	15	P
088	/86	41	42	15	0837	9	GD/3	73/A	99	13	P
089.16	/86	43	44	15	0838	9	OK/3	?/?	79	32	P
089.18	/86	45	46	15	0839	9	GD/3	168/A	99	29	P
090.16	/86	47	48	15	0840	9	GD/3	314/J	64	16	P
090.18	/86	49	50	15	0841	9	GD/3	73/A	99	36	P
091	/86	51	52	15	0842	9	GD/3	0/E	99	47	P
092	/86	ND		NO TAPE							
093	/86	53	54	15	0843	9	GD/3	163/F	99	34	P
094	/86	55	56	15	0844	9	GD/3	0/E	99	28	P
095	/86	57	58	15	0845	9	GD/1.5	23/F	99	34	P
096	/86	59	60	15	0846	9	GD/2	380/E	98	57	P
097	/86	61	62	15	0847	9	GD/2	?/?	93	27	S
098	/86	63	64	15	0848	9	GD/1.5	168/K	83	21	S
099	/86	65	66	15	0849	9	GD/1.5	22/K	70	10	S
100	/86	67	68	15	0850	9	GD/1	40/A	99	7	S
101	/86	69	70	15	0851	9	GD/3	145/E	99	27	P
102	/86	71	72	15	0852	9	GD/3	21/E	99	47	P

JUL day	YR	IR no.	VIS no.	Vol	IA#	Sat	Nav. Conf.	Nav. Acc.	%D	% clr	Qual.
103	/86	ND		NO TAPE							
104	/86	73	74	15	0853	9	GD/3	41/F	99	22	S
105	/86	75	76	15	0854	9	GD/1.5	416/E	76	43	P
106	/86	77	78	15	0855	9	GD/2	152/A	86	50	G
107	/86	79	80	15	0856	9	GD/3	?/?	88	55	P
108	/86	81	82	15	0857	9	GD/1	86/K	76	73	GP
109	/86	83	84	15	0858	9	GD/1.5	0/E	99	73	G
110	/86	85	86	15	0859	9	GD/2	65/E	99	58	P
111	/86	87	88	15	0860	9	GD/2	143/E	99	25	P
112	/86	89	90	15	0861	9	GD/3	286/F	99	22	S
113	/86	91	92	15	0862	9	GD/1	44/F	89	40	P
114	/86	93	94	15	0863	9	GD/3	103/F	99	59	P
115	/86	95	96	15	0864	9	GD/1.5	351/F	98	69	PS
116	/86	97	98	15	0865	9	GD/3	?/?	92	54	P
117	/86	99	100	15	0866	9	GD/1.5	170/I	81	37	P
118	/86	101	102	15	0867	9	GD/1	0/I	68	33	P
119	/86	103	104	15	0868	9	GD/3	240/E	99	81	GP
120	/86	105	106	15	0869	9	GD/1.5	73/E	99	49	P
121	/86	107	108	15	0870	9	GD/1.5	62/E	99	59	P
122	/86	109	110	15	0871	9	GD/3	48/F	99	23	P
123	/86	111	112	15	0872	9	GD/2	86/F	99	19	S
124	/86	1	2	16	0873	9	GD/2	255/F	99	27	P
125	/86	3	4	16	0874	9	GD/3	?/?	95	33	P
126.17	/86	5	6	16	0875A	9	GD/3	?/?	85	60	GP
126.18	/86	7	8	16	0877	9	GD/3	0/E	99	67	GP
127.16	/86	9	10	16	0875B	9	GD/3	36/I	73	56	PS
127.18	/86	11	12	16	0876	9	GD/3	42/E	99	67	GS
128	/86	13	14	16	0878	9	GD/3	51/E	99	67	P
129	/86	15	16	16	0879	9	GD/3	37/E	99	84	VG
130	/86	17	18	16	0880	9	GD/2	14/E	82	38	PS
131	/86	19	20	16	0881	9	GD/2	0/E	99	71	P
132	/86	21	22	16	0882	9	GD/2	0/E	99	79	GS
133	/86	23	24	16	0883	9	GD/3	289/F	99	87	G
134.17	/86	25	26	16	0884	9	GD/3	382/F	97	98	VG
134.18	/86	27	28	16	0885	9	GD/3	0/A	99	98	VG
135.07	/86	29	30	16	0887	9	GD/1.5	43/F	99	91	PS
135.17	/86	31	32	16	0886	9	GD/3	?/?	90	88	G
135.18	/86	33	34	16	0888	9	GD/3	0/E	99	84	G
136.07	/86	35	36	16	0889	9	GD/1.5	100/F	99	79	GS
136.16	/86	37	38	16	0890	9	GD/3	232/I	78	90	GS
136.18	/86	39	40	16	0891	9	GD/3	38/E	99	85	GS
137.06	/86	41	42	16	0892	9	GD/1	0/F	99	61	P
137.16	/86	43	44	16	0893	9	GD/2	90/J	64	75	GP
138	/86	45	46	16	0894	9	GD/3	0/E	99	45	P
139	/86	47	48	16	0895	9	GD/3	85/E	99	56	P
140	/86	49	50	16	0896	9	GD/3	146/E	99	68	P
141	/86	51	52	16	0897	9	GD/1.5	11/E	99	56	P
142	/86	53	54	16	0898	9	GD/3	156/F	99	42	P
143	/86	55	56	16	0899	9	GD/3	323/F	98	49	GP
144	/86	57	58	16	0900	9	GD/3	?/?	92	75	GP
145	/86	59	60	16	0901	9	GD/3	176/I	82	84	GP
146.16	/86	61	62	16	0902	9	GD/3	225/J	69	55	P
146.18	/86	63	64	16	0903	9	GD/3	43/E	99	75	GS
147.16	/86	65	66	16	0904	9	GD/2	137/K	51	54	P

JUL day	YR	IR no.	VIS no.	Vol	IA#	Sat	Nav. Conf.	Nav. Acc.	%D	% clr	Qual.
147.18	/86	67	68	16	0905	9	GD/3	16/E	99	68	PS
148	/86	69	70	16	0906	9	GD/3	0/E	99	63	P
149	/86	71	72	16	0907	9	GD/3	152/E	99	54	GS
150	/86	73	74	16	0908	9	GD/2	0/<E	71	41	P
151	/86	75	76	16	0909	9	GD/2	108/F	99	39	PS
152	/86	77	78	16	0910	9	GD/3	289/F	99	27	PS
153	/86	79	80	16	0911	9	GD/3	?/?	95	21	PS
154	/86	81	82	16	0912	9	GD/2	27/E	99	51	GS
155	/86	83	84	16	0913	9	GD/3	143/E	99	17	S
156	/86	85	86	16	0914	9	GD/3	57/E	99	66	GP
157	/86	87	88	16	0915	9	GD/3	42/E	99	71	GS
158	/86	89	90	16	0916	9	GD/3	60/E	99	82	G
159	/86	91	92	16	0917	9	OK/1.5	77/I	99	22	PS
160	/86	93	94	16	0918	9	GD/3	0/F	99	42	P
161	/86	95	96	16	0919	9	GD/2	265/F	99	36	P
162	/86	97	98	16	0920	9	GD/3	?/E	96	37	PS
163	/86	99	100	16	0921	9	GD/3	55/E	99	83	GP
164	/86	101	102	16	0922	9	GD/3	122/I	77	66	P
165	/86	103	104	16	0923	9	GD/1.5	0/E	99	80	GP
166	/86	105	106	16	0924	9	GD/3	57/E	99	67	PS
167	/86	107	108	16	0926	9	GD/3	61/E	99	38	SP
168	/86	109	110	16	0927	9	GD/3	?/?	99	36	P
169	/86	ND		NO TAPE							
170	/86	111	112	16	0928	9	GD/1.5	97/F	99	39	P
171	/86	113	114	16	0929	9	GD/2	329/F	98	55	PS
172.17	/86	1	2	17	0930	9	GD/3	?/?	91	78	G
172.18	/86	3	4	17	0931	9	GD/3	25/E	99	76	GS
173	/86	5	6	17	0932	9	GD/3	?/?	80	35	P
174	/86	7	8	17	0933	9	GD/3	0/E	99	64	P
175	/86	9	10	17	0934	9	GD/2	30/E	99	67	PS
176	/86	11	12	17	0935	9	GD/3	0/E	99	40	P
177	/86	13	14	17	0936	9	GD/1.5	16/E	99	54	PS
178	/86	15	16	17	0937	9	OK/1.5	0/E	99	74	P
179	/86	17	18	17	0938	9	OK/3	32/F	99	44	P
180	/86	19	20	17	0939	9	OK/3	55/A	99	37	S
181	/86	21	22	17	0940	9	GD/3	8/A	99	42	SP
182	/86	23	24	17	0941	9	GD/3	20/E	99	62	PS
183	/86	25	26	17	0942	9	GD/2	41/E	99	49	GP
184	/86	27	28	17	0943	9	GD/3	55/E	99	58	PS
185	/86	29	30	17	0944	9	GD/3	96/E	99	30	S
186	/86	31	32	17	0945	9	GD/3	226/E	99	56	PS
187	/86	33	34	17	0946	9	GD/3	24/E	99	81	G
188	/86	35	36	17	0947	9	GD/2	0/E	99	67	PS
189	/86	37	38	17	0948	9	GD/3	0/A	96	53	PS
190	/86	39	40	17	0949	9	GD/3	?/?	95	37	P
191	/86	41	42	17	0950	9	GD/3	0/A	99	28	S
192	/86	43	44	17	0951	9	GD/3	107/A	99	42	S
193	/86	45	46	17	0952	9	OK/3	0/E	99	70	PS
194	/86	47	48	17	0953	9	GD/3	0/E	99	80	PS
195	/86	49	50	17	0954	9	GD/2	104/E	99	53	PS
196	/86	51	52	17	0955	9	GD/2	19/E	99	49	S
197	/86	53	54	17	0956	9	GD/3	0/E	99	76	P
198	/86	55	56	17	0957	9	GD/3	208/F	99	65	G
199	/86	57	58	17	0958	9	GD/1	333/F	73	58	S

JUL day	YR	IR no.	VIS no.	Vol	IA#	Sat	Nav. Conf.	Nav. Acc.	%D	% clr	Qual.
200	/86	59	60	17	0959	9	GD/3	20/E	99	87	GS
201	/86	ND		NO TAPE							
202	/86	61	62	17	0960	9	GD/3	72/A	99	61	PS
203	/86	63	64	17	0961	9	GD/2	0/E	99	86	G
204	/86	65	66	17	0962	9	GD/3	39/E	99	66	PS
205	/86	67	68	17	0963	9	GD/3	0/E	99	57	GS
206	/86	69	70	17	0964	9	OK/3	?/?	99	6	S
207	/86	71	72	17	0965	9	GD/3	14/F	99	67	GP
208	/86	73	74	17	0966	9	GD/3	259/F	98	67	GP
209	/86	75	76	17	0967	9	GD/3	?/?	92	52	P
210	/86	77	78	17	0968	9	GD/3	228/I	82	56	P
211	/86	79	80	17	0969	9	GD/3	33/I	69	90	P
212	/86	81	82	17	0970	9	GD/2	?/?	83	40	P
213	/86	83	84	17	0971	9	GD/3	48/H	99	60	P
214	/86	85	86	17	0972	9	GD/3	20/E	99	73	P
215	/86	87	88	17	0973	9	GD/1.5	97/F	99	77	P
216	/86	89	90	17	0974	9	GD/3	?/?	99	52	P
217	/86	91	92	17	0975	9	GD/3	188/F	99	74	GS
218.17	/86	93	94	17	0976	9	GD/3	?/?	95	77	P
218.18	/86	95	96	17	0977	9	GD/2	62/A	67	65	P
219	/86	97	98	17	0978	9	GD/3	?/?	99	63	SP
220	/86	99	100	17	0979	9	GD/1.5	115/I	74	58	S
221	/86	101	102	17	0980	9	GD/3	0/E	99	70	P
222	/86	103	104	17	0981	9	GD/2	113/E	99	84	GP
223	/86	105	106	17	0982	9	GD/2	178/E	99	57	S
224	/86	107	108	17	0983	9	GD/3	282/E	99	70	GS
225	/86	109	110	17	0984	9	GD/2	0/F	99	73	G
226	/86	111	112	17	0985	9	GD/3	132/F	99	82	G
227	/86	1	2	18	0986	9	OK/3	327/F	97	63	GS
228	/86	3	4	18	0987	9	OK/3	?/?	90	64	P
229	/86	5	6	18	0988	9	GD/3	170/I	79	77	GP
230	/86	7	8	18	0989	9	GD/3	130/I	65	63	P
231	/86	9	10	18	0990	9	GD/3	0/E	99	70	P
232	/86	11	12	18	0991	9	GD/3	0/E	99	93	G
233	/86	13	14	18	0992	9	GD/2	43/E	99	76	GP
234	/86	15	16	18	0993	9	GD/3	0/E	99	52	PS
235	/86	17	18	18	0994	9	GD/3	?/?	99	47	P
236	/86	19	20	18	0995	9	OK/1.5	298/F	99	28	S
237	/86	21	22	18	0996	9	GD/3	?/?	94	22	S
238	/86	23	24	18	0997	9	GD/3	17/E	99	69	PS
239	/86	25	26	18	0998	9	GD/3	?/?	71	44	P
240.16	/86	27	28	18	0999	9	GD/3	60/J	54	56	P
240.18	/86	29	30	18	1000	9	GD/3	0/E	99	47	PS
241	/86	31	32	18	1001	9	OK/3	55/E	99	66	S
242	/86	33	34	18	1002	9	OK/3	11/E	99	45	P
243	/86	35	36	18	1003	9	GD/2	15/F	99	82	GS
244	/86	37	38	18	1004	9	GD/2	0/F	99	63	GS
245	/86	39	40	18	1005	9	GD/3	240/F	99	57	P
246	/86	41	42	18	1006	9	GD/3	?/?	96	92	GP
247	/86	ND		NO TAPE							
248	/86	43	44	18	1007	9	GD/2	0/A	99	77	GP
249	/86	ND		NO TAPE							
250	/86	45	46	18	1008	9	GD/3	250/A	99	29	S
251	/86	47	48	18	1009	9	GD/3	70/E	99	77	P

JUL day	YR	IR no.	VIS no.	Vol	IA#	Sat	Nav. Conf.	Nav. Acc.	%D	% clr	Qual.
252	/86	49	50	18	1010	9	GD/1	?/E	99	45	P
253	/86	51	52	18	1011	9	GD/3	62/F	99	43	S
254	/86	53	54	18	1012	9	PR/1.5	88/F	99	12	P
255	/86	55	56	18	1013	9	GD/3	?/F	98	22	P
256	/86	57	58	18	1014	9	GD/1.5	0/A	99	64	GP
257.17	/86	59	60	18	1015	9	GD/2	97/K	81	49	P
257.18	/86	61	62	18	1016	9	GD/3	73/A	99	50	PS
258	/86	63	64	18	1017	9	GD/3	30/A	99	39	S
259	/86	65	66	18	1018	9	GD/3	0/E	99	51	PS
260	/86	67	68	18	1019	9	GD/2	0/E	99	82	GP
261	/86	69	70	18	1020	9	OK/2	26/E	99	46	PG
262	/86	71	72	18	1021	9	GD/2	70/F	99	50	P
263	/86	73	74	18	1022	9	GD/3	138/F	99	54	P
264	/86	75	76	18	1023	9	GD/3	335/F	99	62	P
265	/86	77	78	18	1024	9	GD/3	?/F	94	33	P
266	/86	ND		NO TAPE							
267	/86	79	80	18	1025	9	GD/1.5	0/K	72	22	S
268	/86	81	82	18	1026	9	GD/2	259/A	99	42	PS
269	/86	83	84	18	1027	9	GD/3	155/E	99	37	P
270	/86	85	86	18	1028	9	GD/1.5	110/I	99	69	P
271	/86	87	88	18	1029	9	GD/3	?/A	99	67	GP
272	/86	89	90	18	1030	9	GD/3	148/F	99	74	GP
273	/86	91	92	18	1031	9	GD/1.5	190/F	99	18	P
274	/86	93	94	18	1032	9	GD/3	246/E	99	58	P
275	/86	95	96	18	1033	9	GD/3	?/?	99	54	PS
276	/86	97	98	18	1034	9	GD/1.5	?/?	77	61	P
277	/86	99	100	18	1035	9	GD/2	202/E	99	13	S
278	/86	101	102	18	1036	9	GD/2	115/E	99	31	P
279	/86	103	104	18	1037	9	GD/3	260/F	99	15	PS
280	/86	105	106	18	1038	9	GD/2	95/A	62	24	S
281	/86	107	108	18	1039	9	GD/1.5	0/F	99	33	P
282	/86	109	110	18	1040	9	GD/2	136/F	99	27	PS
283	/86	111	112	18	1041	9	GD/3	248/E	99	33	S
284	/86	1	2	19	1042	9	GD/2	0/E	99	59	P
285	/86	3	4	19	1043	9	GD/2	108/A	99	56	P
286	/86	5	6	19	1044	9	GD/1.5	114/I	66	56	P
287	/86	7	8	19	1045	9	GD/2	67/E	99	29	P
288	/86	9	10	19	1046	9	GD/2	35/E	99	32	P
289	/86	11	12	19	1047	9	GD/3	136/E	99	31	P
290	/86	13	14	19	1048	9	GD/1	0/E	99	16	P
291	/86	15	16	19	1049	9	GD/3	240/I	99	32	P
292	/86	17	18	19	1050	9	GD/3	322/F	99	32	P
293.17	/86	19	20	19	1051	9	GD/3	?/?	93	68	GP
293.19	/86	21	22	19	1052	9	GD/3	0/A	99	66	GP
294	/86	23	24	19	1053	9	GD/3	176/I	83	35	P
295	/86	25	26	19	1054	9	GD/2	0/E	99	28	P
296	/86	27	28	19	1055	9	GD/3	?/?	99	8	S
297	/86	29	30	19	1056	9	GD/2	170/E	99	21	P
298	/86	31	32	19	1057	9	GD/3	217/E	99	31	P
299	/86	33	34	19	1058	9	GD/1.5	73/F	99	41	GP
300	/86	35	36	19	1059	9	GD/1.5	0/F	99	25	P
301	/86	37	38	19	1060	9	GD/1.5	292/E	99	32	GP
302	/86	39	40	19	1061	9	GD/3	18/A	99	26	P
303	/86	41	42	19	1062	9	GD/3	195/A	99	15	P

JUL day	YR	IR no.	VIS no.	Vol	IA#	Sat	Nav. Conf.	Nav. Acc.	%D	% clr	Qual.
304	/86	43	44	19	1063	9	GD/3	0/E	99	47	P
305	/86	45	46	19	1064	9	GD/3	34/A	99	22	P
306	/86	47	48	19	1065	9	GD/1.5	149/E	99	9	P
307	/86	49	50	19	1066	9	GD/3	96/E	99	22	P
308	/86	51	52	19	1067	9	GD/3	62/I	99	5	S
309	/86	53	54	19	1068	9	OK/3	18/F	99	19	P
310	/86	55	56	19	1069	9	GD/1.5	147/F	99	2	S
311	/86	57	58	19	1070	9	GD/2	284/E	99	32	P
312	/86	59	60	19	1071	9	GD/3	?/?	88	33	GP
313	/86	61	62	19	1072	9	GD/1	145/I	76	1	0
314	/86	63	64	19	1073	9	GD/3	0/E	97	13	S
315	/86	65	66	19	1074	9	GD/2	203/E	99	6	S
316	/86	67	68	19	1075	9	GD/3	82/E	99	16	P
317	/86	69	70	19	1076	9	GD/1.5	0/E	88	3	S
318	/86	71	72	19	1077	9	GD/3	28/E	99	5	S
319	/86	73	74	19	1078	9	GD/3	158/F	99	9	P
320	/86	75	76	19	1079	9	GD/3	?/?	98	8	P
321	/86	77	78	19	1080	9	GD/3	?/?	91	2	S
322	/86	79	80	19	1081	9	GD/3	31/E	99	16	P
323	/86	81	82	19	1082	9	GD/3	25/I	65	1	S
324	/86	83	84	19	1083	9	GD/3	0/E	99	6	P
325	/86	85	86	19	1084	9	GD/3	90/H	99	1	0
326	/86	87	88	19	1085	9	GD/3	74/I	99	1	S
327	/86	89	90	19	1086	9	GD/3	35/F	99	13	P
328	/86	91	92	19	1087	9	GD/3	?/?	99	0	0
329	/86	93	94	19	1088	9	GD/3	310/F	99	10	P
330	/86	95	96	19	1089	9	GD/3	?/?	93	10	P
331	/86	97	98	19	1090	9	GD/3	40/E	99	19	P
332	/86	99	100	19	1091	9	GD/3	?/?	99	5	S
333	/86	101	102	19	1092	9	GD/3	?/?	99	3	S
334	/86	103	104	19	1093	9	GD/2	127/E	99	2	S
335	/86	ND		NO TAPE							
336	/86	105	106	19	1094	9	GD/2	0/F	99	24	P
337	/86	107	108	19	1095	9	GD/1.5	0/F	99	0	0
338	/86	109	110	19	1096	9	OK/3	440/F	99	15	P
339	/86	111	112	19	1097	9	GD/3	0/A	99	5	P
340	/86	1	2	20	1098	9	GD/3	139/A	99	12	PS
341	/86	3	4	20	1099	9	GD/3	0/A	99	5	S
342	/86	5	6	20	1100	9	GD/3	0/E	99	1	S
343	/86	7	8	20	1101	9	GD/3	0/E	99	4	S
344	/86	9	10	20	1102	9	GD/3	17/H	99	0	0
345	/86	11	12	20	1103	9	GD/3	117/F	99	6	S
346	/86	13	14	20	1104	9	OK/3	76/F	99	1	0
347	/86	15	16	20	1105	9	GD/3	180/F	99	4	S
348	/86	17	18	20	1106	9	GD/3	328/F	97	5	P
349	/86	19	20	20	1107	9	GD/1.5	?/?	90	4	P
350	/86	21	22	20	1108	9	GD/3	50/E	99	5	S
351	/86	23	24	20	1109	9	GD/3	0/E	99	14	P
352	/86	25	26	20	1110	9	GD/3	?/?	46	7	S
353	/86	27	28	20	1111	9	GD/3	112/H	99	0	0
354	/86	29	30	20	1112	9	GD/1.5	14/I	99	3	S
355	/86	31	32	20	1113	9	OK/3	0/F	99	7	S
356	/86	33	34	20	1114	9	GD/3	131/F	99	7	P
357	/86	35	36	20	1115	9	PR/3	269/F	98	4	S

JUL day	YR	IR no.	VIS no.	Vol	IA#	Sat	Nav. Conf.	Nav. Acc.	%D	% clr	Qual.
358	/86	37	38	20	1116	9	OK/3	174/E	99	11	P
359	/86	39	40	20	1117	9	GD/3	337/I	83	0	S
360	/86	41	42	20	1118	9	GD/3	?/?	99	8	P
361	/86	43	44	20	1119	9	GD/3	74/E	99	3	S
362	/86	45	46	20	1120	9	GD/3	0/E	99	14	P
363	/86	47	48	20	1121	9	GD/3	207/E	99	12	P
364	/86	49	50	20	1122	9	GD/2	16/F	99	4	S
365	/86	51	52	20	1123	9	GD/3	57/F	99	4	S

Appendix 2: Catalogue of Daily SST and Visible Images in Area F

JUL day	YR	IR no.	VIS no.	Vol	IA#	Sat	Nav. Conf.	Nav. Acc.	%D	% clr	Qual.
001	/84	ND		NO TAPE							
002	/84	ND		NO TAPE							
003	/84	ND		NO TAPE							
004	/84	ND		NO TAPE							
005	/84	ND		NO TAPE							
006	/84	ND		NO TAPE							
007	/84	ND		NO TAPE							
008	/84	ND		NO TAPE							
009	/84	ND		NO TAPE							
010	/84	ND		NO TAPE							
011	/84	ND		NO TAPE							
012	/84	ND		NO TAPE							
013	/84	ND		NO TAPE							
014	/84	ND		NO TAPE							
015	/84	ND		NO TAPE							
016	/84	ND		NO TAPE							
017	/84	ND		NO TAPE							
018	/84	ND		NO TAPE							
019	/84	ND		NO TAPE							
020	/84	ND		NO TAPE							
021	/84	ND		NO TAPE							
022	/84	ND		NO TAPE							
023	/84	ND		NO TAPE							
024	/84	ND		NO TAPE							
025	/84	11	12	1	0001	7	GD/0	300/E	99	6	
026	/84	13	14	1	0002	7	GD/2	163/F	99	30	
027	/84	15	16	1	0003	7	OK/3	72/F	99	22	
028	/84	17	18	1	0004	7	GD/3	>512/E	99	14	
029	/84	19	20	1	0005	7	OK/1.5	430/F	99	31	
030.17	/84	21	22	1	0006	7	OK/1	>512/E	99	12	
030.19	/84	23	24	1	0007	7	OK/3	190/E	65	6	
031	/84	25	26	1	0008	7	GD/3	257/H	84	6	
032	/84	27	28	1	0009	7	GD/2	26/E	99	5	
033	/84	29	30	1	0010	7	GD/3	57/E	99	10	
034	/84	31	32	1	0011	7	PR/1.5	17/E	99	19	
035	/84	33	34	1	0012	7	OK/1	46/F	99	16	
036	/84	35	36	1	0013	7	OK/1.5	312/E	99	4	
037	/84	37	38	1	0014	7	GD/3	>512/I	99	15	
038	/84	39	40	1	0015	7	GD/0	271/I	99	0	
039	/84	41	42	1	0016	7	OK/3	200/E	81	1	
040	/84	43	44	1	0017	7	OK/3	10/E	99	4	
041	/84	45	46	1	0018	7	OK/3	22/E	99	6	
042	/84	47	48	1	0019	7	OK/2	189/E	99	2	
043	/84	49	50	1	0020	7	OK/2	93/F	99	24	
044	/84	51	52	1	0021	7	OK/2	134/F	99	26	
045	/84	ND		NO TAPE							
046	/84	53	54	1	0022	7	OK/3	200/I	99	30	
047.17	/84	55	56	1	0023	7	OK/2	54/I	99	16	
047.19	/84	57	58	1	0024	7	GD/3	49/E	77	22	
048	/84	59	60	1	0025	7	OK/3	50/E	97	8	
049	/84	61	62	1	0027	7	PR/3	0/E	99	15	
050	/84	63	64	1	0026	7	PR/3	122/E	99	26	
051	/84	65	66	1	0028	7	OK/3	155/H	99	14	

JUL day	YR	IR no.	VIS no.	Vol	IA#	Sat	Nav. Conf.	Nav. Acc.	%D	% clr	Qual.
052	/84	67	68	1	0029	7	OK/3	122/F	99	8	
053	/84	69	70	1	0030	7	OK/1.5	79/K	99	4	
054	/84	71	72	1	0031	7	GD/3	243/I	99	7	
055	/84	73	74	1	0032	7	GD/3	257/J	99	30	
056	/84	75	76	1	0033	7	PR/1	209/B	94	6	
057	/84	77	78	1	0034	7	GD/3	35/H	99	28	
058	/84	79	80	1	0035	7	GD/3	65/H	99	18	
059	/84	81	82	1	0036	7	OK/1	134/E	99	9	
060	/84	83	84	1	0037	7	OK/1.5	>512/NN	99	29	
061	/84	85	86	1	0038	7	PR/3	10/E	99	16	
062	/84	87	88	1	0039	7	PR/1.5	244/I	99	42	
063	/84	89	90	1	0040	7	GD/3	95/K	99	23	
064	/84	ND		NO TAPE							
065	/84	91	92	1	0041	7	GD/3	0/E	99	18	
066	/84	93	94	1	0042	7	OK/1.5	215/H	99	9	
067	/84	95	96	1	0043	7	PR/3	90/F	99	14	
068	/84	97	98	1	0044	7	GD/1	164/F	99	30	
069	/84	99	100	1	0045	7	GD/1.5	342/F	99	27	
070	/84	101	102	1	0046	7	GD/2	296/E	99	6	
071	/84	103	104	1	0047	7	OK/1.5	>512/F	99	17	
072	/84	105	106	1	0048	7	OK/3	0/E	90	21	
073	/84	107	108	1	0049	7	GD/2	0/E	99	22	
074	/84	109	110	1	0050	7	OK/3	114/E	99	21	
075	/84	1	2	2	0051	7	OK/3	198/F	99	22	
076	/84	3	4	2	0052	7	OK/3	29/H	99	27	
077	/84	5	6	2	0053	7	GD/1	>512/F	99	52	
078	/84	7	8	2	0054	7	GD/2	470/E	99	25	
079.17	/84	9	10	2	0056	7	OK/2	304/E	99	34	
079.19	/84	11	12	2	0055	7	OK/3	50/E	67	24	
080	/84	13	14	2	0057	7	OK/3	400/E	88	13	
081	/84	15	16	2	0058	7	GD/3	120/E	99	41	
082	/84	17	18	2	0059	7	GD/1	100/E	98	59	
083	/84	19	20	2	0060	7	OK/3	0/F	99	53	
084	/84	21	22	2	0061	7	PR/2	70/F	99	17	
085	/84	ND		NO TAPE							
086	/84	23	24	2	0062	7	PR/3	490/F	99	55	
087	/84	25	26	2	0063	7	GD/2	150/K	99	15	
088	/84	ND		NO TAPE							
089	/84	27	28	2	0064	7	GD/3	0/E	99	37	
090	/84	29	30	2	0065	7	OK/1.5	360/E	99	6	
091	/84	31	32	2	0066	7	GD/2	300/E	99	9	
092	/84	33	34	2	0067	7	OK/3	0/F	99	14	
093	/84	35	36	2	0068	7	GD/3	219/F	99	40	
094	/84	37	38	2	0069	7	GD/3	461/F	99	46	
095	/84	39	40	2	0070	7	OK/2	203/I	99	37	
096	/84	41	42	2	0071	7	GD/2	297/H	84	60	
097	/84	ND		NO TAPE							
098	/84	ND		NO TAPE							
099	/84	ND		NO TAPE							
100	/84	ND		NO TAPE							
101	/84	43	44	2	0072	7	OK/1	240/E	99	36	
102	/84	45	46	2	0073	7	GD/1	>512/F	99	18	
103	/84	ND		NO TAPE							
104	/84	ND		NO TAPE							

JUL day	YR	IR no.	VIS no.	Vol	IA#	Sat	Nav. Conf.	Nav. Acc.	%D	% clr	Qual.
105	/84	ND		NO TAPE							
106	/84	ND		NO TAPE							
107	/84	47	48	2	0074	7	GD/1.5	0/F	99	61	
108	/84	49	50	2	0075	7	GD/3	167/H	99	12	
109	/84	51	52	2	0076	7	OK/3	54/F	99	35	
110	/84	53	54	2	0077	7	GD/2	357/F	99	61	
111	/84	55	56	2	0078	7	GD/3	214/K	99	63	G
112	/84	57	58	2	0079	7	GD/3	176/E	81	5	S
113	/84	59	60	2	0080	7	0/0	0/E	99	33	P
114	/84	61	62	2	0081	7	GD/3	76/E	99	38	G
115	/84	63	64	2	0082	7	GD/3	0/E	99	41	VG
116.18	/84	65	66	2	0083	7	GD/1.5	0/E	99	46	G
116.20	/84	67	68	2	0084	7	GD/3	0/A	1	50	0
117.18	/84	69	70	2	0085	7	GD/2	172/F	99	71	VG
117.19	/84	71	72	2	0086	7	GD/3	57/A	20	70	G
118	/84	73	74	2	0087	7	GD/1.5	341/F	99	86	G
119	/84	75	76	2	0088	7	GD/1.5	>512/F	99	65	G
120	/84	ND		NO TAPE							
121	/84	77	78	2	0089	7	GD/2	50/E	99	46	G
122	/84	79	80	2	0090	7	GD/2	186/E	99	72	VG
123	/84	81	82	2	0091	7	GD/1.5	36/E	99	54	PG
124	/84	83	84	2	0092	7	GD/2	0/F	99	57	G
125	/84	85	86	2	0093	7	GD/1.5	102/F	99	61	G
126.18	/84	87	88	2	0094	7	GD/2	0/K	99	35	PS
126.19	/84	89	90	2	0095	7	GD/1.5	51/A	37	26	P
127	/84	91	92	2	0096	7	GD/3	0/E	99	37	GP
128	/84	93	94	2	0097	7	GD/2	0/E	77	21	P
129	/84	95	96	2	0098	7	GD/2	110/E	97	37	P
130	/84	97	98	2	0099	7	GD/3	0/H	99	34	PG
131	/84	99	100	2	0100	7	GD/3	155/E	99	25	P
132.11	/84	101	102	2	0101	8	OK/1	76/F	99	66	
132.18	/84	103	104	2	0102	7	GD/3	22/F	99	77	G
133	/84	105	106	2	0103	7	GD/3	39/F	99	82	VG
134	/84	107	108	2	0104	7	GD/3	416/F	99	60	G
135	/84	109	110	2	0105	7	GD/3	248/K	99	59	P
136	/84	111	112	2	0106	7	PR/2	>512/F	99	58	P
137	/84	113	114	2	0107	7	GD/3	0/B	94	52	P
138	/84	115	116	2	0108	7	GD/2	0/E	99	36	P
139	/84	1	2	3	0109	7	GD/3	122/E	99	34	PG
140	/84	3	4	3	0110	7	GD/1	0/E	99	51	GP
141	/84	5	6	3	0111	7	GD/1	0/F	99	61	GS
142	/84	7	8	3	0112	7	GD/2	428/I	99	31	P
143	/84	9	10	3	0113	7	GD/3	417/I	99	63	P
144	/84	11	12	3	0114	7	GD/3	121/K	99	76	GS
145	/84	13	14	3	0115	7	GD/2	10/E	92	89	G
146	/84	15	16	3	0116	7	OK/3	20/E	99	60	P
147	/84	ND		NO TAPE							
148	/84	17	18	3	0117	7	GD/2	47/F	99	84	GP
149	/84	19	20	3	0118	7	GD/1.5	15/F	99	56	P
150	/84	21	22	3	0119	7	GD/2	247/F	99	76	G
151	/84	23	24	3	0120	7	GD/2	347/I	99	61	PS
152	/84	25	26	3	0121	7	OK/2	162/I	99	37	PS
153	/84	27	28	3	0122	7	OK/3	0/E	86	59	PS
154	/84	29	30	3	0123	7	GD/3	0/H	89	16	PS

Sea Surface Temperature Atlas Catalogue | Area F | 1984

JUL day	YR	IR no.	VIS no.	Vol	IA#	Sat	Nav. Conf.	Nav. Acc.	%D	% clr	Qual.
155	/84	31	32	3	0124	7	GD/3	0/H	99	18	P
156	/84	33	34	3	0125	7	OK/3	81/H	99	25	P
157	/84	35	36	3	0126	7	OK/3	0/H	99	46	PS
158	/84	37	38	3	0127	7	OK/2	>512/E	99	79	G
159	/84	39	40	3	0128	7	OK/3	>512/F	99	79	G
160.17	/84	41	42	3	0129	7	OK/3	169/I	99	57	PS
160.19	/84	43	44	3	0130	7	GD/2	0/E	67	39	PS
161	/84	45	46	3	0131	7	GD/2	0/E	84	48	PS
162.12	/84	47	48	3	0132	8	PR/3	0/E	89	86	?
162.19	/84	49	50	3	0133	7	PR/3	26/E	89	66	G
162.22	/84	51	52	3	0134	8	PR/3	49/E	99	84	GP
163	/84	53	54	3	0135	7	OK/3	78/E	99	70	GS
164.08	/84	55	56	3	0136	7	PR/2	0/E	88	32	P
164.18	/84	57	58	3	0137	7	GD/3	0/E	99	60	P
165	/84	59	60	3	0138	7	OK/3	28/F	99	47	PS
166	/84	61	62	3	0139	7	OK/1.5	204/F	99	81	P
167	/84	63	64	3	0140	7	OK/3	>512/E	99	44	GS
168.17	/84	65	66	3	0141	7	PR/2	135/K	99	60	PS
168.19	/84	67	68	3	0142	7	OK/3	0/E	65	58	PG
169.17	/84	69	70	3	0143	7	GD/3	0/K	99	68	GP
169.19	/84	71	72	3	0144	7	PR/3	0/E	82	56	GP
170	/84	73	74	3	0145	7	PR/3	0/H	90	45	P
171	/84	75	76	3	0146	7	PR/3	275/E	99	24	P
172	/84	77	78	3	0147	7	OK/3	0/F	99	68	PS
173	/84	79	80	3	0148	7	OK/3	66/F	99	51	P
174.18	/84	81	82	3	0149	7	OK/3	224/E	99	42	P
174.20	/84	83	84	3	0150	7	PR/3	0/A	24	61	P
175	/84	85	86	3	0151	7	OK/3	?/F	99	39	PS
176.17	/84	87	88	3	0152	7	GD/1	?/F	45	46	PS
176.19	/84	89	90	3	0153	7	GD/3	167/E	63	70	GP
177.17	/84	91	92	3	0154	7	PR/3	0/I	99	88	VG
177.19	/84	93	94	3	0155	7	PR/3	?/?	83	96	G
177.22	/84	95	96	3	0156	6	PR/3	0/F	99	95	G
178.07	/84	97	98	3	0157	7	OK/1	201/F	99	95	VG
178.12	/84	99	100	3	0158	6	OK/3	86/I	98	95	GP
179.07	/84	101	102	3	0159	7	PR/2	?/F	99	75	G
179.18	/84	103	104	3	0160	7	OK/3	29/E	99	52	P
180	/84	105	106	3	0161	7	PR/3	39/E	99	71	PG
181	/84	107	108	3	0162	7	OK/3	39/F	99	90	G
182	/84	109	110	3	0163	7	PR/3	370/F	99	46	P
183.18	/84	111	112	3	0164	7	PR/3	403/F	99	54	PS
183.19	/84	113	114	3	0165	7	OK/3	203/E	42	39	PS
184	/84	115	116	3	0166	7	OK/3	0/E	61	81	G
185	/84	1	2	4	0167	7	OK/3	0/A	81	72	PS
186	/84	3	4	4	0168	6	OK/3	201/E	94	89	P
187	/84	5	6	4	0169	7	OK/2	0/E	99	63	P
188	/84	7	8	4	0170	7	OK/3	0/E	99	91	P
189	/84	9	10	4	0171	7	OK/3	0/F	99	83	G
190	/84	11	12	4	0172	7	PR/3	130/F	99	95	G
191	/84	13	14	4	0173	7	OK/2	399/F	99	68	P
192	/84	15	16	4	0174	7	OK/1.5	>512/E	99	78	GP
193	/84	17	18	4	0175	7	OK/1.5	72/I	99	71	PG
194	/84	19	20	4	0176	6	OK/3	93/F	99	65	P
195	/84	21	22	4	0177	6	GD/3	0/E	99	79	P

JUL day	YR	IR no.	VIS no.	Vol	IA#	Sat	Nav. Conf.	Nav. Acc.	%D	% clr	Qual.
196	/84	23	24	4	0178	7	OK/3	0/E	99	90	G
197	/84	25	26	4	0179	7	OK/1.5	0/F	99	69	P
198	/84	27	28	4	0180	7	OK/2	198/F	99	85	P
199	/84	29	30	4	0181	7	OK/3	>512/E	99	41	P
200	/84	31	32	4	0182	7	OK/3	>512/E	99	89	G
201	/84	33	34	4	0183	7	OK/3	0/E	78	74	GP
202.07	/84	35	36	4	0186	7	GD/3	385/F	99	98	G
202.19	/84	37	38	4	0185	7	OK/1.5	0/E	98	96	G
202.22	/84	39	40	4	0184	7	OK/2	0/E	99	99	G
203.07	/84	41	42	4	0187	7	GD/1.5	350/F	99	93	G
203.19	/84	43	44	4	0188	7	GD/3	0/E	99	87	GP
204.11	/84	45	46	4	0190	6	GD/3	0/E	99	75	P
204.18	/84	47	48	4	0189	7	OK/3	0/E	99	52	P
205	/84	49	50	4	0191	7	OK/1.5	7/F	99	82	GP
206	/84	51	52	4	0192	7	GD/1	28/F	99	50	GP
207.12	/84	53	54	4	0193	6	OK/2	0/A	95	94	G?
207.18	/84	55	56	4	0194	7	OK/1.5	361/F	99	85	GS
207.19	/84	57	58	4	0195	7	OK/1.5	0/A	38	57	PS
208	/84	59	60	4	0196	7	GD/1.5	>512/E	99	84	GP
209	/84	61	62	4	0197	7	GD/1.5	74/I	99	76	PG
210	/84	63	64	4	0198	7	OK/3	120/B	97	56	GP
211.12	/84	65	66	4	0199	6	OK/3	200/E	91	69	P
211.19	/84	67	68	4	0200	7	OK/3	200/E	99	62	GP
212	/84	69	70	4	0201	7	PR/2	400/E	99	76	PG
213.11	/84	71	72	4	0202	6	OK/1.5	113/F	99	93	GP
213.18	/84	73	74	4	0203	7	OK/1.5	0/F	99	78	GP
214	/84	75	76	4	0204	7	GD/1.5	267/F	99	51	PS
215.18	/84	77	78	4	0205	7	GD/2	326/F	99	73	PG
215.19	/84	79	80	4	0206	7	OK/2	400/E	37	69	P
216.18	/84	81	82	4	0207	7	GD/2	400/I	99	80	GP
216.19	/84	83	84	4	0208	7	GD/3	120/A	57	89	S
217.17	/84	85	86	4	0209	7	OK/1	200/I	99	85	GP
217.22	/84	87	88	4	0210	7	GD/2	0/A	78	86	GP
218	/84	89	90	4	0211	7	GD/1.5	0/E	97	62	P
219	/84	91	92	4	0212	7	GD/1.5	60/E	99	86	G
220	/84	93	94	4	0213	7	OK/1.5	0/E	99	62	GP
221	/84	95	96	4	0214	7	GD/1.5	0/F	99	66	P
222	/84	97	98	4	0215	6	GD/1	222/F	99	71	P
223	/84	99	100	4	0216	7	GD/2	341/E	99	80	P
224.18	/84	101	102	4	0217	7	GD/2	>512/E	99	86	P
224.21	/84	103	104	4	0218	6	GD/1.5	326/E	99	90	GS
225	/84	ND		NO TAPE							
226	/84	ND		NO TAPE							
227	/84	105	106	4	0219	7	GD/1.5	0/E	99	82	PG
228	/84	107	108	4	0220	7	GD/1.5	O/E	99	91	GP
229.11	/84	109	110	4	0221a	6	GD/1	O/E	99	96	GP
229.18	/84	111	112	4	0221b	7	GD/1	50/E	34	81	GS
230	/84	113	114	4	0222	7	GD/1.5	70/E	99	83	PG
231	/84	115	116	4	0223	7	PR/1.5	350/E	99	59	P
232	/84	1	2	5	0224	6	OK/3	200/E	93	72	P
233	/84	3	4	5	0225	6	OK/2	145/E	99	93	S
234	/84	5	6	5	0226	7	GD/1.5	0/E	95	47	P
235	/84	ND		NO TAPE							
236	/84	7	8	5	0227	7	GD/1.5	54/E	99	78	GP

JUL day	YR	IR no.	VIS no.	Vol	IA#	Sat	Nav. Conf.	Nav. Acc.	%D	% clr	Qual.
237	/84	9	10	5	0228	6	OK/1	52/E	99	96	S
238	/84	11	12	5	0229	6	OK/1	320/H	99	57	P
239	/84	13	14	5	0230	7	GD/1.5	280/F	99	97	G
240	/84	15	16	5	0231	7	GD/1	0/E	99	90	PG
241.17	/84	17	18	5	0232	7	GD/2	100/I	99	74	GS
241.19	/84	19	20	5	0233	7	GD/3	48/A	74	64	PS
242	/84	21	22	5	0234	7	GD/3	39/E	94	94	G
243	/84	ND		NO TAPE							
244	/84	23	24	5	0235	7	GD/2	121/E	99	90	P
245	/84	25	26	5	0236	7	GD/2	193/F	99	72	GP
246	/84	27	28	5	0237	7	OK/3	100/E	99	64	PG
247	/84	29	30	5	0238	7	GD/1.5	>512/F	99	64	PS
248	/84	31	32	5	0239	7	OK/3	>512/F	99	82	PS
249.12	/84	33	34	5	0240	6	GD/1.5	200/E	96	96	GS
249.18	/84	35	36	5	0241	7	GD/1.5	98/K	99	89	VG
250	/84	37	38	5	0242	7	GD/1.5	0/I	99	46	P
251	/84	39	40	5	0243	7	GD/1.5	0/E	99	41	PG
252	/84	41	42	5	0244	7	GD/2	0/E	99	65	PG
253	/84	43	44	5	0245	7	GD/1.5	180/E	99	58	PS
254	/84	45	46	5	0246	7	GD/1.5	30/F	99	83	GP
255.18	/84	47	48	5	0247	7	GD/1.5	230/F	99	68	P
255.20	/84	49	50	5	0248	7	GD/3	0/A	31	46	S
256	/84	51	52	5	0249	7	GD/3	23/A	52	15	S
257	/84	53	54	5	0250	7	GD/1.5	?/?	71	62	P
258	/84	55	56	5	0251	7	GD/2	0/E	90	21	P
259.22	/84	59	60	5	0252	6	GD/1.5	189/E	84	41	S
259.19	/84	57	58	5	0253	7	OK/1	100/E	99	60	PS
260	/84	61	62	5	0254	7	GD/3	300/E	99	65	GS
261	/84	63	64	5	0255	7	OK/1	200/F	99	43	PS
262.11	/84	65	66	5	0256	6	OK/3	350/E	99	90	G
262.18	/84	67	68	5	0257	7	GD/3	0/F	99	83	G
263	/84	111	112	5	0258	6	OK/2	52/F	99	78	P
264.19	/84	69	70	5	0259	7	GD/3	17/A	50	68	P
264.22	/84	71	72	5	0260	6	OK/1.5	19/EA	99	72	GP
265	/84	73	74	5	0261	7	GD/2	0/A	69	50	P
266	/84	ND		NO TAPE							
267	/84	ND		NO TAPE							
268	/84	75	76	5	0262	7	OK/3	100/E	99	46	PS
269	/84	77	78	5	0264	7	OK/1.5	150/E	99	68	P
270	/84	79	80	5	0265	7	OK/1.5	50/F	99	46	P
271	/84	81	82	5	0266	7	GD/1	277/F	99	68	P
272.11	/84	83	84	5	0267	6	PR/2	97/F	99	76	P
272.99	/84	ND			0268	7	BAD	TAPE			
273	/84	85	86	5	0269	7	OK/1.5	174/I	99	67	P
274.19	/84	87	88	5	0263	7	OK/1	70/E	86	71	P
274.21	/84	89	90	5	0270	6	OK/3	204/F	99	75	GP
275	/84	91	92	5	0271	7	GD/2	0/F	99	90	G
276	/84	93	94	5	0272	7	GD/3	196/E	99	72	P
277	/84	NA			0273	7	GD/3	161/-			
278	/84	95	96	5	0274	7	GD/2	238/A	7	19	0
279	/84	97	98	5	0275	7	GD/1	202/F	99	57	GP
280	/84	99	100	5	0276	7	OK/3	12/A	45	43	S
281	/84	101	102	5	0277	7	GD/1.5	281/A	65	41	P
282	/84	103	104	5	0278	7	GD/3	0/I	98	62	P

JUL day	YR	IR no.	VIS no.	Vol	IA#	Sat	Nav. Conf.	Nav. Acc.	%D	% clr	Qual.
283	/84	105	106	5	0279	7	GD/3	0/E	99	26	S
284.19	/84	107	108	5	0280	7	OK/3	261/E	99	48	PS
284.??	/84	ND			0281	BAD	TAPE				
285	/84	109	110	5	0282	7	OK/3	336/B	99	32	S
286	/84	1	2	6	0283	7	GD/3	391/E	99	39	S
287	/84	ND		NO TAPE							
288	/84	ND		NO TAPE							
289	/84	3	4	6	0285	7	GD/3	22/E	63	44	P
290.17	/84	5	6	6	0286	7	OK/2	>512/?	99	42	PS
290.19	/84	7	8	6	0287	7	PR/3	0/E	83	39	P
291	/84	9	10	6	0288	7	OK/3	17/E	99	84	GP
292.11	/84	11	12	6	0289	7	PR/3	0/E	99	99	P
292.19	/84	13	14	6	0290	7	PR/3	100/E	99	84	P
293	/84	ND			0291	7	BAD	TAPE			
294	/84	15	16	6	0292	7	GD/1	0/F	99	64	P
295	/84	17	18	6	0293	7	OK/3	228/F	99	67	P
296	/84	19	20	6	0294	7	GD/1.5	>512/?	42	45	P
297	/84	21	22	6	0295	7	PR/2	250/I	99	16	S
298	/84	23	24	6	0296	7	GD/3	0/E	81	51	P
299	/84	25	26	6	0297	7	OK/3	260/E	99	37	P
300	/84	27	28	6	0298	7	OK/2	0/E	99	29	S
301	/84	33	34	6	0299	7	PR/2	0/E	99	55	PS
302	/84	29	30	6	0300	7	OK/3	55/A	2	13	0
303	/84	31	32	6	0301	7	OK/1	229/F	99	47	P
304.08	/84	35	36	6	0302	7	OK/2	23/F	99	46	GP
304.11	/84	37	38	6	0303	6	OK/2	0/E	99	87	P
304.20	/84	39	40	6	0304	7	GD/2	84/A	41	97	G
305.08	/84	75	76	6	0305	7	OK/3	0/F	99	57	GP
305.11	/84	41	42	6	0306	6	PR/2	0/F	99	79	P
305.18	/84	43	44	6	0307	7	PR/3	240/F	99	58	P
305.19	/84	45	46	6	0308	7	GD/3	0/A	60	43	P
306.99	/84	ND			0309	BAD	TAPE				
306.17	/84	47	48	6	0310	7	OK/2	35/K	99	37	S
306.19	/84	49	50	6	0311	7	GD/1.5	0/A	80	61	P/OI
307	/84	ND		NO TAPE							
308	/84	51	52	6	0312	7	PR/3	12/A	99	40	P
309	/84	53	54	6	0313	7	PR/3	0/E	99	57	PS
310	/84	55	56	6	0314	7	PR/3	157/H	99	24	P
311	/84	57	58	6	0315	7	PR/3	189/F	99	74	GP
312	/84	59	60	6	0316	7	OK/3	0/A?	40	18	P
313	/84	61	62	6	0317	7	OK/3	0/E	59	44	P
314	/84	63	64	6	0318	7	OK/3	0/A	79	39	P
315	/84	65	66	6	0319	7	OK/2	170/B	99	72	GS
316	/84	ND			0320	BAD	TAPE				
317	/84	67	68	6	0321	7	PR/3	0/F	99	46	P
318	/84	ND			0322	BAD	TAPE				
319	/84	ND		NO TAPE							
320	/84	69	70	6	0323	7	OK/1.5	0/M	38	11	S
321	/84	71	72	6	0324	7	PR/3	316/A	58	22	P
322	/84	73	74	6	0325	7	?/1	>512/F	99	35	P
323	/84	77	78	6	0326	7	OK/1.5	0/A	98	15	S
324	/84	79	80	6	0327	7	OK/2	0/A	99	17	PS
325	/84	81	82	6	0328	7	PR/3	31/E	99	17	S
326	/84	83	84	6	0329	7	PR/3	35/F	99	12	S

JUL day	YR	IR no.	VIS no.	Vol	IA#	Sat	Nav. Conf.	Nav. Acc.	%D	% clr	Qual.
327	/84	85	86	6	0330	7	OK/3	192/F	99	8	S
328	/84	87	88	6	0331	7	OK/3	0/F	37	3	S
329	/84	89	90	6	0332	7	PR/3	0/A	58	27	P
330	/84	91	92	6	0333	7	GD/2	0/A	77	3	S
331	/84	93	94	6	0334	7	OK/2	122/A	97	22	P
332	/84	95	96	6	0335	7	OK/3	463/F	99	14	S
333	/84	97	98	6	0336	7	PR/3	238/E	99	54	P
334	/84	NA			0337	7	OK/1.5	184/?			
335	/84	99	100	6	0338	7	GD/1.5	63/A	17	47	0
336	/84	ND		NO TAPE							
337	/84	101	102	6	0339	7	PR/1.5	298/I	99	8	S
337	/84	103	104	6	0340	6	PR/3	58/A	32	2	S
338	/84	105	106	6	0341	7	OK/1.5	0/A	77	23	PS
339	/84	107	108	6	0342	7	GD/2	25/A	97	11	P
340	/84	ND		NO TAPE							
341	/84	ND		NO TAPE							
342	/84	ND		NO TAPE							
343	/84	109	110	6	0343	7	GD/3	83/A	17	3	S
344.20	/84	111	112	6	0344	7	OK/3	60/A	37	10	S
344.22	/84	113	114	6	0345	6	OK/3	0/F	99	4	S
345	/84	1	2	7	0346	7	GD/3	>512/?	99	27	S
346	/84	3	4	7	0347	7	GD/3	18/E	77	7	S
347	/84	ND			0348	BAD	TAPE				
348	/84	5	6	7	0349	7	GD/3	>512/?	99	13	S
349	/84	7	8	7	0350	7	OK/3	58/E	99	13	S
350	/84	ND			0351	BAD	TAPE				
351	/84	ND			0352	BAD	TAPE				
352	/84	9	10	7	0353	7	GD/3	58/A	37	31	P
353.08	/84	11	12	7	0354	7	0/1	0/E	99	24	S
353.18	/84	13	14	7	0355	7	GD/3	>512/?	99	14	S
354	/84	15	16	7	0356	7	GD/3	>512/?	77	26	P
355	/84	ND			0357	BAD	TAPE				
356	/84	ND			0358	BAD	TAPE				
357	/84	17	18	7	0359	7	0/1.5	?/?	99	17	S
358.18	/84	19	20	7	0360	7	GD/3	98/E	99	39	P
358.21	/84	21	22	7	0361	7	PR/2	>512/E	99	28	PS
359	/84	23	24	7	0362	7	GD/3	224/H	99	37	P
360	/84	ND			0363	BAD	TAPE				
361.18	/84	25	26	7	0364	7	GD/3	>512/?	99	11	S
361.19	/84	27	28	7	0365	7	GD/3	0/A	57	2	S
362.18	/84	29	30	7	0366	7	GD/3	92/K	99	1	S
362.19	/84	31	32	7	0367	7	GD/3	0/A	77	2	S
363.17	/84	33	34	7	0368	9	GD/3	76/B	99	3	0
363.19	/84	35	36	7	0369	7	GD/2	90/E	97	6	S
364	/84	NA			0370	9	GD/2	198/A?			
365.18	/84	37	38	7	0371	9	GD/2	74/?	6	3	0
365.22	/84	39	40	7	0372	6	OK/3	20/F	99	1	0
366.12	/84	41	42	7	0373	6	OK/3	0/E	96	17	S
366.17	/84	43	44	7	0374	9	GD/2	91/F	99	5	S

Sea Surface Temperature Atlas Catalogue Area F 1985

JUL day	YR	IR no.	VIS no.	Vol	IA#	Sat	Nav. Conf.	Nav. Acc.	%D	% clr	Qual.
001	/85	45	46	7	0375	7	OK/3	72/F	99	12	S
002	/85	47	48	7	0376	7	OK/3	?/?	99	7	S
003	/85	49	50	7	0377	7	GD/3	?/?	99	10	P
004	/85	51	52	7	0378	7	GD/3	?/?	99	17	PS
005	/85	53	54	7	0379	7	OK/3	30/E	96	11	S
006	/85	55	56	7	0380	7	GD/3	5/B	99	5	S
007	/85	57	58	7	0381	7	GD/3	174/B	99	4	S
008	/85	ND		NO TAPE							
009	/85	59	60	7	0382	9	GD/3	0/F	99	3	S
010	/85	61	62	7	0383	9	GD/3	225/F	99	7	S
011	/85	63	64	7	0384	9	GD/3	?/?	99	4	S
012	/85	65	66	7	0385	9	GD/3	?/?	99	10	S
013	/85	67	68	7	0386	9	GD/3	0/A	82	2	S
014	/85	ND			0387	BAD	TAPE				
015	/85	69	70	7	0388	9	GD/2	?/?	99	89	G
016	/85	71	72	7	0389	9	GD/3	?/?	99	5	S
017	/85	73	74	7	0390	9	GD/3	130/E	99	5	S
018	/85	75	76	7	0391	9	GD/3	54/F	99	3	S
019	/85	77	78	7	0392	9	OK/3	145/F	99	10	S
020	/85	79	80	7	0393	9	OK/1.5	?/?	41	3	S
021	/85	81	82	7	0394	9	GD/3	88/A	58	3	S
022	/85	83	84	7	0395	9	GD/2	?/?	99	21	PS
023	/85	85	86	7	0396	9	OK/3	0/K	99	16	S
024	/85	87	88	7	0397	9	GD/2	40/E	99	17	S
025	/85	ND			0398	BAD	TAPE				
026	/85	89	90	7	0399	9	OK/2	0/E	99	5	S
027	/85	91	92	7	0400	9	GD/3	0/F	99	2	S
028	/85	93	94	7	0401	9	GD/2	329/F	99	4	S
029	/85	95	96	7	0402	9	OK/3	265/F	99	6	S
030	/85	97	98	7	0403	9	GD/3	14/A	31	3	S
031.16	/85	99	100	7	0404	9	GD/3	?/?	99	9	S
031.18	/85	101	102	7	0405	9	GD/1.5	10/E	66	6	S
032	/85	103	104	7	0406	9	GD/1.5	50/K	99	5	S
033	/85	105	106	7	0407	9	GD/1	28/J	75	18	P
034	/85	ND			0408	BAD	TAPE				
035	/85	107	108	7	0409	9	OK/3	50/E	99	1	S
036	/85	109	110	7	0410	9	OK/3	0/F	99	2	S
037	/85	111	112	7	0411	9	OK/3	0/F	99	3	S
038	/85	113	114	7	0412	9	OK/2	163/F	99	1	S
039	/85	115	116	7	0413		GD/3	?/?	99	10	
040	/85	1	2	8	0414	9	OK/2	164/A	58	0	O
041	/85	3	4	8	0415	9	OK/1.5	100/K	99	6	S
042	/85	5	6	8	0416	9	GD/2	0/E	92	6	S
043	/85	7	8	8	0417	9	OK/2	0/E	99	3	S
044	/85	9	10	8	0418	9	OK/1.5	0/H	99	8	PS
045	/85	11	12	8	0419	9	OK/2	?/?	99	13	P
046	/85	13	14	8	0420	9	GD/2	?/?	99	16	PS
047	/85	15	16	8	0421	9	GD/2	?/?	99	4	S
048	/85	17	18	8	0422	9	PR/3	370/H	99	47	P
049	/85	19	20	8	0423	9	PR/3	?/?	99	11	S
050	/85	21	22	8	0424	9	OK/3	200/I	99	18	S
051	/85	23	24	8	0425	9	OK/3	0/E	84	4	S
052	/85	25	26	8	0426	9	OK/3	0/E	99	3	S

JUL day	YR	IR no.	VIS no.	Vol	IA#	Sat	Nav. Conf.	Nav. Acc.	%D	% clr	Qual.
053	/85	27	28	8	0427	9	OK/3	0/H	99	13	P
054	/85	ND			0428	BAD	TAPE				
055	/85	29	30	8	0429	9	OK/1.5	77/E	99	3	S
056	/85	31	32	8	0430	9	OK/3	32/E	99	2	S
057	/85	ND			0431	BAD	TAPE				
058	/85	33	34	8	0432	9	OK/1.5	?/?	99	8	S
059	/85	35	36	8	0433	9	OK/3	23/E	60	1	S
060	/85	37	38	8	0434	9	0K/3	?/?	99	15	P
061	/85	39	40	8	0435	9	GD/2	67/I	95	2	S
062	/85	41	42	8	0436	9	OK/3	112/E	99	8	S
063	/85	43	44	8	0437	9	OK/3	125/E	99	0	0
064	/85	45	46	8	0438	9	OK/1	>512/F	99	2	S
065	/85	47	48	8	0439	9	PR/3	0/F	99	3	S
066	/85	49	50	8	0440	9	OK/3	222/F	99	6	S
067	/85	51	52	8	0441	9	OK/3	<512/F	99	18	P
068	/85	53	54	8	0442	9	OK/2	59/A	54	5	S
069	/85	55	56	8	0443	9	OK/2	?/?	99	34	PS
070.16	/85	57	58	8	0444	9	OK/3	200/J	99	37	P
070.18	/85	59	60	8	0445	9	0K/3	73/A	88	34	P
071	/85	61	62	8	0446	9	OK/3	>512/F	99	31	PS
072	/85	63	64	8	0447	9	GD/3	260/E	99	48	G
073	/85	65	66	8	0448	9	GD/1	180/F	99	45	P
074	/85	67	68	8	0449	9	OK/3	>512/A	99	10	S
075	/85	ND	NO TAPE								
076	/85	69	70	8	0450	9	OK/3	380/F	99	8	S
077	/85	71	72	8	0451	9	PR/3	?/?	99	1	0
078.16	/85	73	74	8	0452	9	GD/3	>512/F	99	5	S
078.18	/85	75	76	8	0453	9	GD/3	69/A	65	2	S
079	/85	77	78	8	0454	9	GD/3	44/K	99	10	S
080	/85	79	80	8	0455	9	OK/3	57/E	97	13	P
081	/85	81	82	8	0456	9	GD/3	117/A	99	5	S
082	/85	83	84	8	0457	9	OK/3	120/E	99	11	S
083	/85	85	86	8	0458	9	OK/3	150/F	99	16	S
084	/85	87	88	8	0459	9	OK/3	134/F	99	14	S
085.17	/85	89	90	8	0461	9	OK/3	235/F	99	8	S
085.18	/85	91	92	8	0460	9	GD/2	0/A	24	6	S
086	/85	93	94	8	0462	9	GD/3	23/A	41	9	S
087.16	/85	95	96	8	0463	9	GD/1	306/I	99	29	P
087.18	/85	97	98	8	0464	9	GD/1.5	187/A	58	19	S
088.06	/85	99	100	8	0465	9	GD/1.5	0/E	99	3	S
088.18	/85	101	102	8	0466	9	OK/2	32/A	75	8	S
089	/85	103	104	8	0467	9	GD/1	25/I	99	14	S
090	/85 1	05	106	8	0468	9	GD/3	58/E	99	19	S
091	/85	107	108	8	0469	9	GD/3	359/E	99	7	S
092	/85 1	09	110	8	0470	9	OK/3	105/F	99	3	S
093	/85	111	112	8	0471	9	GD/3	63/F	99	15	P
094.17	/85	1	2	9	0472	9	OK/3	145/F	99	23	P
094.18	/85	3	4	9	0473	9	GD/3	0/<E	18	1	0
095	/85	5	6	9	0474	9	GD/2	400/F	99	33	P
096	/85	7	8	9	0475	9	GD/3	?/?	99	21	S
097	/85	9	10	9	0476	9	GD/3	0/A	69	36	P
098	/85	11	12	9	0477	9	OK/1.5	103/K	99	48	GP
099	/85	13	14	9	0478	9	GD/3	170/E	99	36	P
100	/85	15	16	9	0479	9	GD/3	0/A	99	27	P

JUL day	YR	IR no.	VIS no.	Vol	IA#	Sat	Nav. Conf.	Nav. Acc.	%D	% clr	Qual.
101	/85	17	18	9	0480	9	GD/3	100/E	99	31	S
101	/85	NA			0481	SAME	AS	ABOVE			
102	/85	ND			0482	9	BAD	TAPE			
103	/85	19	20	9	0483	9	OK/3	73/F	99	9	S
104	/85	21	22	9	0484	9	GD/3	280/F	99	9	S
105	/85	23	24	9	0485	9	GD/1.5	?/?	99	11	S
106	/85	25	26	9	0486	9	GD/2	?/?	99	23	P
107	/85	27	28	9	0487	9	GD/3	85/K	99	33	GP
108	/85	29	30	9	0488	9	GD/3	19/E	96	7	S
109	/85	ND			0489	BAD	TAPE				
110	/85	31	32	9	0490	9	GD/3	60/E	99	17	S
111	/85	33	34	9	0491	9	GD/3	54/F	99	24	PS
112	/85	35	36	9	0492	9	GD/3	53/F	99	30	P
113	/85	37	38	9	0493	9	GD/2	120/F	99	20	S
114	/85	39	40	9	0494	9	GD/2	?/?	99	22	P
115	/85	41	42	9	0495	9	GD/2	340/E	99	21	P
116	/85	43	44	9	0496	9	GD/3	154/K	99	36	P
117	/85	45	46	9	0497	9	GD/3	0/K	99	30	P
118	/85	47	48	9	0498	9	GD/3	0/E	99	45	P
119	/85	ND			0499	BAD	TAPE				
120	/85	49	50	9	0500	9	GD/3	0/E	99	18	S
121	/85	51	52	9	0501	9	GD/3	68/E	99	25	PS
122	/85	53	54	9	0502	9	GD/3	0/F	99	31	PS
123	/85	55	56	9	0503	9	OK/1.5	282/F	99	25	PS
124	/85	57	58	9	0504	9	GD/3	0/A	33	13	S
125	/85	59	60	9	0505	9	GD/3	184/K	99	30	PS
126	/85	61	62	9	0506	9	GD/3	0/E	83	50	P
127	/85	63	64	9	0507	9	GD/3	223/E	99	38	P
128	/85	65	66	9	0508	9	GD/3	?/?	99	18	P
129	/85	67	68	9	0509	9	GD/3	65/E	99	25	PS
130	/85	69	70	9	0510	9	GD/3	302/E	99	14	P
131	/85	71	72	9	0511	9	GD/3	42/F	99	32	PS
132	/85	73	74	9	0512	9	GD/3	121/F	99	32	P
133	/85	75	76	9	0513	9	GD/3	?/?	99	7	S
134	/85	77	78	9	0514	9	GD/1.5	250/K	99	30	P
135.16	/85	79	80	9	0515	9	GD/2	125/K	99	19	P
135.18	/85	81	82	9	0516	9	GD/3	0/E	75	14	S
136	/85	83	84	9	0517	9	GD/3	51/A	92	25	P
137	/85	85	86	9	0518	9	GD/2	104/E	99	48	S
138	/85	87	88	9	0519	9	GD/1	0/E	43	25	S
139	/85	89	90	9	0520	9	GD/3	0/E	99	80	P
140	/85	91	92	9	0521	9	GD/2	91/F	99	49	P
141	/85	93	94	9	0522	9	GD/1.5	40/F	99	59	P
142	/85	95	96	9	0523	9	GD/1.5	262/F	99	70	P
143	/85	97	98	9	0524	9	GD/3	?/?	99	57	P
144	/85	99	100	9	0525	9	GD/1	170/K	99	58	P
145	/85	101	102	9	0526	9	GD/3	170/K	99	47	S
146	/85	103	104	9	0527	9	GD/3	50/E	99	32	S
147	/85	105	106	9	0528	9	GD/3	90/E	99	53	P
148	/85	107	108	9	0529	9	GD/3	160/F	99	49	P
149	/85	109	110	9	0530	9	OK/3	0/F	99	38	GP
150	/85	111	112	9	0531	9	OK/3	0/F	99	48	P
151	/85	1	2	10	0532	9	OK/3	165/F	99	47	P
152	/85	3	4	10	0533	9	OK/2	450/F	99	24	S

JUL day	YR	IR no.	VIS no.	Vol	IA#	Sat	Nav. Conf.	Nav. Acc.	%D	% clr	Qual.
153.16	/85	5	6	10	0534	9	GD/2	260/K	99	38	PS
153.18	/85	7	8	10	0535	9	GD/3	10/A	61	19	P
154	/85	9	10	10	0536	9	OK/3	?/?	99	71	GP
155	/85	11	12	10	0537	9	GD/3	0/A	94	52	P
156	/85	13	14	10	0538	9	OK/1.5	45/E	99	54	P
157	/85	15	16	10	0539	9	OK/3	210/E	99	25	P
158	/85	17	18	10	0540	9	OK/3	10/E	99	28	P
159	/85	19	20	10	0541	9	OK/3	20/F	99	67	GP
160	/85	21	22	10	0542	9	PR/3	120/F	99	55	P
161	/85	23	24	10	0543	9	OK/3	>512/?	99	29	S
162	/85	25	26	10	0544	9	OK/3	313/K	99	45	PS
163	/85	27	28	10	0545	9	OK/3	?/?	99	47	PS
164	/85	29	30	10	0546	9	OK/3	?/?	86	58	GP
165	/85	31	32	10	0547	9	GD/2	150/K	70	33	P
166	/85	33	34	10	0548	9	OK/3	0/E	99	56	GP
167	/85	35	36	10	0549	9	OK/3	0/E	99	67	GP
168	/85	37	38	10	0550	6	PR/3	170/F	99	62	P
169	/85	39	40	10	0551	9	OK/2	65/F	99	44	P
170	/85	41	42	10	0552	9	OK/1.5	307/E	99	34	SP
171	/85	43	44	10	0553	9	PR/3	?/?	99	50	P
172	/85	45	46	10	0554	9	PR/3	?/?	99	62	PS
173	/85	47	48	10	0555	9	OK/3	0/A	79	78	P
174	/85	49	50	10	0556	9	OK/3	0/A	96	62	P
175	/85	51	52	10	0557	9	OK/3	94/E	99	62	P
176	/85	53	54	10	0558	9	PR/3	34/E	99	92	G
177	/85	55	56	10	0559	9	OK/3	0/E	99	84	GP
178	/85	57	58	10	0560	9	PR/1.5	22/F	99	65	P
179	/85	59	60	10	0561	9	PR/3	118/F	99	68	GP
180	/85	61	62	10	0562	9	PR/1.5	364/F	99	62	P
181	/85	63	64	10	0563	9	PR/3	?/?	99	61	P
182	/85	65	66	10	0564	9	PR/2	150/I	99	58	P
183	/85	67	68	10	0565	9	OK/2	0/I	99	91	G
184	/85	69	70	10	0566	9	PR/3	0/E	99	72	GP
185	/85	71	72	10	0567	9	PR/3	0/F	99	71	P
186	/85	73	74	10	0568	9	PR/3	31/E	99	81	P
187	/85	75	76	10	0569	9	OK/3	0/F	99	86	GP
188	/85	77	78	10	0570	9	PR/1.5	14/F	99	56	GP
189	/85	79	80	10	0571	9	PR/3	?/?	99	33	PS
190	/85	81	82	10	0572	9	OK/3	0/A	48	77	P
191	/85	83	84	10	0573	9	PR/3	?/?	99	93	GS
192	/85	85	86	10	0574	9	PR/2	62/I	99	81	P
193	/85	87	88	10	0575	9	OK/3	53/E	99	75	PS
194	/85	89	90	10	0576	9	PR/3	50/E	99	59	P
195	/85	91	92	10	0577	9	PR/3	10/E	99	67	P
196	/85	93	94	10	0578	9	PR/3	162/F	99	68	P
197	/85	95	96	10	0579	9	PR/3	?/?	99	31	S
198	/85	97	98	10	0580	9	OK/3	170/F	99	63	GP
199	/85	99	100	10	0581	9	OK/3	?/?	99	68	P
200	/85	101	102	10	0582	9	OK/3	?/?	99	54	P
201	/85	103	104	10	0583	9	OK/3	110/I	99	35	P
201	/85	NA			0584	SAME	AS	ABOVE			
202.16	/85	105	106	10	0585	9	OK/2	90/I	99	57	P
202.18	/85	107	108	10	0586	9	PR/3	90/E	92	60	P
203	/85	109	110	10	0587	9	OK/3	0/E	99	63	P

JUL day	YR	IR no.	VIS no.	Vol	IA#	Sat	Nav. Conf.	Nav. Acc.	%D	% clr	Qual.
204	/85	111	112	10	0588	9	OK/3	90/E	99	61	P
205	/85	1	2	11	0589	9	PR/3	0/E	99	63	P
206	/85	3	4	11	0590	9	PR/3	0/F	99	53	S
207	/85	5	6	11	0591	9	OK/3	63/F	99	70	P
208	/85	7	8	11	0592	9	OK/3	?/?	99	67	P
209	/85	9	10	11	0593	9	PR/3	?/?	99	74	P
210	/85	11	12	11	0594	9	GD/1.5	0/F	99	93	GP
211	/85	13	14	11	0595	9	OK/3	89/E	86	35	P
212	/85	15	16	11	0596	9	OK/3	34/E	99	79	P
213	/85	ND		NO TAPE							
214	/85	17	18	11	0597	9	OK/3	42/E	99	43	P
215	/85	19	20	11	0598	9	OK/3	0/F	99	94	G
216.1	7/85	21	22	11	0599	9	GD/3	70/F	99	48	P
216.18	/85	23	24	11	0600	9	GD/3	0/A	12	68	P
217	/85	25	26	11	0601	9	GD/3	209/F	99	89	GS
218	/85	27	28	11	0602	9	GD/3	?/?	99	81	P
219	/85	29	112	11	0603	9	GD/3	36/E	64	56	PS
220.16	/85	30	31	11	0604	9	GD/1.5	68/I	99	85	P
220.18	/85	32	33	11	0605	9	GD/3	?/?	81	83	GP
221	/85	34	35	11	0606	9	GD/3	5/E	97	69	P
222	/85	36	37	11	0607	9	GD/1.5	0/E	99	89	P
223	/85	38	39	11	0608	9	GD/3	135/E	99	93	P
224	/85	40	41	11	0609	9	GD/3	156/F	99	77	P
225.17	/85	42	43	11	0610	9	GD/3	79/F	99	56	P
225.19	/85	44	45	11	0611	9	GD/3	17/A	3	94	0
226	/85	46	47	11	0612	9	GD/3	142/F	99	56	P
227	/85	48	49	11	0613	9	GD/3	37/A	27	80	P
228	/85	50	51	11	0614	9	GD/3	174/E	57	46	P
229	/85	52	53	11	0615	9	GD/3	0/A	75	49	P
230	/85	54	55	11	0616	9	GD/3	0/I	98	44	P
231	/85	56	57	11	0617	9	GD/3	0/E	99	98	P
232	/85	58	59	11	0618	9	GD/3	?/?	99	71	GP
233	/85	60	61	11	0619	9	OK/3	0/E	99	58	P
234	/85	62	63	11	0620	9	GD/3	0/E	99	65	P
235	/85	64	65	11	0621	9	GD/3	59/E	99	60	P
236	/85	66	67	11	0622	9	GD/3	?/?	99	65	P
237	/85	68	69	11	0623	9	GD/3	?/?	99	78	P
238	/85	70	71	11	0624	9	GD/3	?/?	99	89	G
239	/85	72	73	11	0625	9	GD/3	63/I	99	77	P
240	/85	74	75	11	0626	9	GD/3	70/A	99	58	P
241	/85	76	77	11	0627	9	GD/3	130/E	99	42	P
242	/85	78	79	11	0628	9	GD/3	45/E	99	43	P
243	/85	80	81	11	0629	9	GD/3	28/E	99	58	P
244	/85	82	83	11	0630	9	GD/3	0/E	99	51	P
245	/85	84	85	11	0631	9	GD/3	182/F	99	79	P
246	/85	86	87	11	0632	9	GD/3	?/?	99	58	P
247	/85	88	89	11	0633	9	GD/3	220/I	99	51	P
248	/85	90	91	11	0634	9	GD/2	60/A	78	41	P
249	/85	92	93	11	0635	9	GD/3	0/I	99	59	P
250	/85	94	95	11	0636	9	GD/3	0/E	99	57	P
251	/85	96	97	11	0637	9	GD/3	40/E	99	34	PS
252	/85	98	99	11	0638	9	GD/1	>512/E	99	59	PS
253	/85	ND		NO TAPE							
254	/85	ND		NO TAPE							

JUL day	YR	IR no.	VIS no.	Vol	IA#	Sat	Nav. Conf.	Nav. Acc.	%D	% clr	Qual.
255	/85	ND		NO TAPE							
256	/85	ND		NO TAPE							
257	/85	100	101	11	0639	9	GD/3	17/E	72	30	S
258	/85	102	103	11	0640	9	GD/3	0/A	88	63	P
259	/85	ND		NO TAPE							
260	/85	ND		NO TAPE							
261	/85	104	105	11	0641	9	GD/3	0/F	99	77	P
262.11	/85	106	107	11	0643	8	GD/1	>512/F	99	98	P
262.17	/85	108	109	11	0642	9	GD/2	75/F	99	91	GP
263	/85	110	111	11	0644	9	GD/1.5	0/E	14	37	P
264	/85	1	2	12	0645	9	GD/1.5	193/E	31	87	P
265	/85	3	4	12	0646	9	GD/3	?/?	99	56	PS
266	/85	5	6	12	0647	9	GD/2	260/I	99	77	GS
267	/85	7	8	12	0648	9	GD/3	9/A	82	80	P
268	/85	9	10	12	0649	9	GD/3	220/E	98	69	P
269	/85	11	12	12	0650	9	GD/3	0/E	99	72	P
270	/85	13	14	12	0651	9	GD/3	38/E	99	37	P
271	/85	15	16	12	0652	9	GD/2	326/E	99	56	P
272	/85	17	18	12	0653	9	GD/2	0/F	99	54	P
273	/85	19	20	12	0654	9	GD/3	69/A	23	31	P
274	/85	21	22	12	0655	9	GD/3	?/?	99	55	PS
275	/85	23	24	12	0656	9	GD/3	?/?	99	74	PS
276	/85	25	26	12	0657	9	GD/3	0/E	74	55	P
277	/85	27	28	12	0658	9	GD/3	0/I	99	74	PS
278	/85	29	30	12	0659	9	GD/1.5	32/E	99	83	PS
279	/85	31	32	12	0660	9	GD/0	?/F	99	63	P
280	/85	33	34	12	0661	9	GD/1	43/E	99	67	GP
281	/85	35	36	12	0662	9	GD/2	0/F	99	60	P
282	/85	37	38	12	0663	9	GD/3	?/?	99	39	P
283	/85	39	40	12	0664	9	GD/3	247/F	99	22	P
284	/85	41	42	12	0665	9	GD/3	?/?	99	37	P
285	/85	43	44	12	0666	9	GD/2	226/I	99	15	S
286	/85	45	46	12	0667	9	GD/3	54/I	99	20	S
287	/85	47	48	12	0668	9	GD/3	274/A	99	38	PS
288	/85	ND			0669	BAD	TAPE				
289	/85	49	50	12	0670	9	GD/2	24/E	99	31	P
290	/85	51	52	12	0671	9	GD/2	16/F	99	62	P
291	/85	53	54	12	0672	9	GD/3	22/F	99	66	P
292	/85	55	56	12	0673	9	GD/3	?/?	99	25	PS
293	/85	ND		NO TAPE							
294	/85	57	58	12	0674	9	GD/3	28/E	59	8	S
295	/85	59	60	12	0675	9	GD/3	111/E	75	19	S
296.16	/85	61	62	12	0676A	9	GD/3	44/I	96	48	P
296.18	/85	63	64	12	0676B	9	GD/2	20/A	59	46	P
297	/85	65	66	12	0677	9	GD/3	0/E	99	30	PS
298	/85	67	68	12	0678	9	GD/2	269/E	99	25	PS
299	/85	69	70	12	0679	9	GD/2	270/F	99	38	P
300	/85	71	72	12	0680	9	GD/2	55/F	99	58	P
301	/85	73	74	12	0681	9	GD/2	22/A	18	11	S
302	/85	75	76	12	0682	9	GD/2	0/A	35	12	S
303	/85	77	78	12	0683	9	GD/2	?/?	99	14	PS
304	/85	79	80	12	0684	9	GD/3	21/E	68	9	S
305	/85	81	82	12	0685	9	GD/2	108/M	36	24	P
306	/85	83	84	12	0686	9	GD/3	35/E	99	66	P

JUL day	YR	IR no.	VIS no.	Vol	IA#	Sat	Nav. Conf.	Nav. Acc.	%D	% clr	Qual.
307	/85	85	86	12	0687	9	GD/1	40/E	99	53	P
308	/85	87	88	12	0688	9	GD/2	0/E	99	85	P
309	/85	89	90	12	0689	9	GD/1.5	50/F	99	62	GP
310	/85	91	92	12	0690	9	GD/1	74/F	99	27	PS
311	/85	93	94	12	0691	9	GD/3	28/A	28	22	S
312	/85	95	96	12	0692	9	GD/3	0/A	45	37	P
313	/85	97	98	12	0693	9	GD/3	95/E	62	33	PS
314	/85	99	100	12	0694	9	GD/3	?/?	79	10	S
315	/85	101	102	12	0695	9	GD/3	36/E	96	22	P
316	/85	103	104	12	0696	9	GD/3	20/E	99	40	PS
317	/85	105	106	12	0697	9	GD/1.5	77/E	99	2	S
318	/85	107	108	12	0698	9	GD/3	20/E	99	25	PS
319	/85	109	110	12	0699	9	GD/3	18/F	99	6	S
320	/85	111	112	12	0700	9	GD/2	160/F	99	26	S
321	/85	113	114	12	0701	9	GD/3	150/A	38	37	P
322	/85	1	2	13	0702	9	GD/3	0/A	56	17	PS
323	/85	NA			0703	9	GD/1.5	?/M			
324	/85	3	4	13	0704	9	GD/3	0/J	95	31	PS
325	/85	5	6	13	0705	9	GD/2	89/E	99	30	GP
326	/85	7	8	13	0706	9	GD/3	8/E	99	19	S
327	/85	9	10	13	0707	9	GD/2	20/E	99	17	PS
328	/85	11	12	13	0708	9	GD/1.5	27/F	99	11	PS
329	/85	13	14	13	0709	9	GD/3	40/F	99	28	P
330	/85	15	16	13	0710	9	GD/2	308/F	99	23	P
331	/85	17	18	13	0711	9	GD/2	?/F	99	9	S
332	/85	19	20	13	0712	9	GD/2	184/I	99	22	P
333	/85	21	22	13	0713	9	GD/2	0/K	99	14	PS
334	/85	ND		NO TAPE							
335	/85	23	24	13	0714	9	GD/3	0/E	99	36	PS
336	/85	25	26	13	0715	9	GD/3	100/H	99	5	S
337	/85	27	28	13	0716	9	GD/1.5	126/F	99	17	PS
338	/85	29	30	13	0717	9	GD/1	233/E	99	18	PS
339	/85	31	32	13	0718	9	GD/1.5	188/F	99	8	S
340	/85	33	34	13	0719A	9	GD/1	403/F	97	13	P
341	/85	35	36	13	0719B	9	GD/3	47/A	44	9	S
342	/85	37	38	13	0720	9	GD/2	8/E	78	8	S
343	/85	39	40	13	0721A	9	GD/1	0/K	95	11	PS
344	/85	41	42	13	0721B	9	GD/2	260/A	64	4	S
345	/85	43	44	13	0722A	9	GD/2	74/E	87	19	P
346	/85	45	46	13	0722B	9	GD/1	41/E	99	19	PS
347	/85	47	48	13	0723	9	GD/3	25/F	99	15	S
348	/85	49	50	13	0724	9	GD/1.5	263/E	99	6	S
349	/85	51	52	13	0725	9	GD/3	386/F	99	5	S
350	/85	53	54	13	0726	9	GD/2	?/?	99	14	S
351	/85	55	56	13	0727	9	GD/2	140/K	99	14	S
352	/85	57	58	13	0728	9	OK/1.5	20/K	99	18	PS
353	/85	59	60	13	0729	9	GD/3	55/E	99	6	S
354	/85	61	62	13	0730	9	GD/3	10/E	99	10	S
355	/85	63	64	13	0731	9	GD/1	300/F	99	5	S
356	/85	65	66	13	0732	9	GD/3	135/F	99	5	S
357	/85	67	68	13	0733	9	OK/2	16/F	99	19	P
358	/85	69	70	13	0734	9	GD/3	124/A	34	9	S
359	/85	71	72	13	0735	9	GD/1.5	?/?	99	10	S
360	/85	73	74	13	0736	9	GD/2	?/?	99	4	S

JUL day	YR	IR no.	VIS no.	Vol	IA#	Sat	Nav. Conf.	Nav. Acc.	%D	% clr	Qual.
361	/85	75	76	13	0737	9	GD/1.5	?/?	99	27	PS
362	/85	77	78	13	0738	9	GD/2	54/E	99	13	P
363	/85	79	80	13	0739	9	GD/3	77/E	99	20	S
364	/85	81	82	13	0740	9	GD/3	208/H	99	6	S
365	/85	83	84	13	0747	9	OK/3	252/F	99	25	PS

JUL day	YR	IR no.	VIS no.	Vol	IA#	Sat	Nav. Conf.	Nav. Acc.	%D	% clr	Qual.
001	/86	85	86	13	0748	9	GD/3	?/?	99	3	S
002	/86	87	88	13	0749	9	GD/1.5	210/F	99	18	S
003	/86	89	90	13	0750	9	OK/1.5	?/?	99	16	S
004	/86	91	92	13	0751	9	GD/3	39/E	62	1	S
005	/86	93	94	13	0752	9	GD/3	?/?	79	8	S
006	/86	95	96	13	0753	9	GD/1	40/I	99	3	S
007	/86	97	98	13	0754	9	GD/3	45/A	99	9	S
008	/86	99	100	13	0755	9	GD/1.5	150/E	99	5	S
009	/86	101	102	13	0756	9	GD/1.5	150/E	99	5	S
010	/86	103	104	13	0757	9	GD/2	10/F	99	2	S
011	/86	105	106	13	0758	9	GD/1.5	355/F	99	4	S
012	/86	107	108	13	0759	9	GD/3	296/F	99	16	S
013	/86	109	110	13	0760	9	GD/3	?/?	99	28	P
014	/86	111	112	13	0761	9	GD/1	135/K	99	19	P
015	/86	1	2	14	0762	9	GD/1	?/?	99	2	S
016	/86	3	4	14	0763	9	GD/2	137/A	99	1	S
017	/86	5	6	14	0764	9	GD/2	27/E	99	10	S
018	/86	7	8	14	0765	9	GD/3	216/E	99	6	S
019	/86	9	10	14	0766	9	OK/3	72/E	99	31	S
020	/86	11	12	14	0767	9	GD/1.5	258/I	99	0	S
021	/86	13	14	14	0768	9	GD/3	?/?	99	3	S
022	/86	15	16	14	0769	9	GD/1.5	?/?	99	2	0
023	/86	17	18	14	0770	9	GD/3	0/E	66	5	S
024	/86	19	20	14	0771	9	GD/1.5	340/J	99	0	0
025	/86	21	22	14	0772	9	GD/1.5	55/A	99	9	S
026	/86	23	24	14	0773	9	GD/1	370/E	99	17	P
027	/86	25	26	14	0774	9	OK/1	?/?	99	18	SP
028	/86	27	28	14	0775	9	GD/1	?/?	99	9	P
029	/86	29	30	14	0776	9	GD/1.5	0/F	99	16	PS
030	/86	31	32	14	0777	9	GD/3	230/E	99	4	S
031	/86	33	34	14	0778	9	GD/3	?/?	99	5	S
032	/86	35	36	14	0779	9	GD/3	?/?	99	11	S
033	/86	37	38	14	0780	9	GD/3	310/J	99	1	0
034	/86	39	40	14	0781	9	GD/3	0/E	93	1	0
035	/86	41	42	14	0782	9	GD/3	0/E	99	4	S
036	/86	43	44	14	0783	9	GD/1.5	245/E	99	0	0
037	/86	45	46	14	0784	9	OK/3	114/F	99	7	S
038	/86	47	48	14	0785	9	GD/2	101/A	1	20	0
039.17	/86	49	50	14	0786B	9	GD/1	?/A	99	2	S
039.17	/86	51	52	14	0786A	9	GD/1	?/E	93	2	S
040	/86	53	54	14	0787	9	GD/3	283/F	99	5	S
041	/86	55	56	14	0788	9	GD/3	?/?	99	13	P
042	/86	57	58	14	0789	9	GD/1.5	221/J	99	18	S
043	/86	59	60	14	0790	9	GD/1.5	39/J	99	4	S
044	/86	61	62	14	0791	9	GD/3	117/A	99	3	S
045	/86	63	64	14	0792	9	GD/2	45/E	95	3	S
046	/86	65	66	14	0793	9	GD/1.5	240/E	99	23	P
047	/86	67	68	14	0794	9	GD/1.5	48/E	99	2	S
048	/86	69	70	14	0795	9	GD/3	0/A	12	10	S
049	/86	71	72	14	0796	9	GD/3	211/F	99	13	S
050	/86	73	74	14	0797	9	GD/3	?/?	99	40	P
051	/86	75	76	14	0798	9	GD/3	206/I	99	15	S
052	/86	77	78	14	0799	9	GD/2	100/I	99	22	S

JUL day	YR	IR no.	VIS no.	Vol	IA#	Sat	Nav. Conf.	Nav. Acc.	%D	% clr	Qual.
053	/86	79	80	14	0800	9	GD/3	107/E	96	9	S
054	/86	81	82	14	0801	9	GD/2	87/E	99	5	S
055	/86	ND			0802	BAD	TAPE				
056	/86	83	84	14	0803	9	GD/3	171/E	99	12	S
057	/86	85	86	14	0804	9	GD/3	274/E	99	7	P
058	/86	87	88	14	0805	9	GD/1.5	196/F	99	24	P
059	/86	89	90	14	0806	9	GD/3	?/?	99	5	S
060	/86	91	92	14	0807	9	GD/1.5	?/?	99	1	S
061	/86	93	94	14	0808	9	GD/1.5	320/I	99	7	0
062	/86	95	96	14	0809	9	GD/1.5	0/I	99	15	S
063	/86	97	98	14	0810	9	GD/3	0/E	99	26	S
064	/86	99	100	14	0811	9	GD/3	125/E	99	40	P
065	/86	101	102	14	0812	9	GD/3	42/F	99	7	P
066	/86	103	104	14	0813	9	GD/3	0/E	99	22	S
067	/86	105	106	14	0814	9	GD/1.5	200/F	99	5	S
068	/86	107	108	14	0815	9	GD/1.5	268/F	99	5	S
069	/86	109	110	14	0816	9	GD/3	?/?	99	3	S
070	/86	111	112	14	0817	9	GD/3	260/A	66	0	S
071	/86	1	2	15	0818	9	GD/3	182/J	99	6	0
072.16	/86	3	4	15	0819	9	GD/3	0/J	71	11	S
072.18	/86	5	6	15	0820	9	GD/3	37/E	99	11	S
073	/86	7	8	15	0821	9	GD/3	65/H	99	3	S
074	/86	9	10	15	0822	9	GD/3	72/E	99	5	S
075	/86	11	12	15	0823	9	GD/3	0/F	99	20	S
076	/86	13	14	15	0824	9	GD/3	133/F	99	30	S
077	/86	15	16	15	0825	9	GD/3	262/F	99	33	P
078	/86	17	18	15	0826	9	OK/1.5	407/F	99	35	PS
079	/86	19	20	15	0827	9	GD/3	243/I	99	10	P
080.16	/86	21	22	15	0828	9	GD/3	83/I	99	3	P
080.18	/86	23	24	15	0829	9	GD/3	90/A	77	2	S
081	/86	25	26	15	0830	9	GD/2	0/A	93	12	0
082	/86	27	28	15	0831	9	GD/2	25/E	99	43	P
083	/86	29	30	15	0832	9	GD/3	119/E	99	15	P
084	/86	31	32	15	0833	9	GD/3	74/F	99	2	P
085	/86	33	34	15	0834	9	GD/3	?/?	99	13	S
086	/86	35	36	15	0835	9	GD/1.5	270/E	99	36	S
087	/86	37	38	15	0836	9	OK/3	?/?	99	2	P
088	/86	39	40	15	0837	9	GD/3	73/A	54	21	S
089.16	/86	41	42	15	0838	9	OK/3	?/?	99	45	S
089.18	/86	43	44	15	0839	9	GD/3	168/A	71	51	P
090.16	/86	45	46	15	0840	9	GD/3	314/J	95	22	P
090.18	/86	47	48	15	0841	9	GD/3	73/A	89	21	P
091	/86	49	50	15	0842	9	GD/3	0/E	99	31	P
092	/86	ND			NO	TAPE					P
093	/86	51	52	15	0843	9	GD/3	163/F	99	7	P
094	/86	53	54	15	0844	9	GD/3	0/E	99	30	PS
095	/86	55	56	15	0845	9	GD/1.5	23/F	99	32	PS
096	/86	57	58	15	0846	9	GD/2	380/E	99	32	PS
097	/86	59	60	15	0847	9	GD/2	?/?	99	44	P
098	/86	61	62	15	0848	9	GD/1.5	168/K	99	53	P
099	/86	63	64	15	0849	9	GD/1.5	22/K	99	47	P
100	/86	65	66	15	0850	9	GD/1	40/A	99	29	P
101	/86	67	68	15	0851	9	GD/3	145/E	99	56	P
102	/86	69	70	15	0852	9	GD/3	21/E	99	79	GP

JUL day	YR	IR no.	VIS no.	Vol	IA#	Sat	Nav. Conf.	Nav. Acc.	%D	% clr	Qual.
103	/86	ND			NO	TAPE					
104	/86	71	72	15	0853	9	GD/3	41/F	99	68	P
105	/86	73	74	15	0854	9	GD/1.5	416/E	21	9	S
106	/86	75	76	15	0855	9	GD/2	152/A	39	14	S
107	/86	77	78	15	0856	9	GD/3	?/?	99	37	P
108	/86	79	80	15	0857	9	GD/1	86/K	99	46	PS
109	/86	81	82	15	0858	9	GD/1.5	0/E	95	45	P
110	/86	83	84	15	0859	9	GD/2	65/E	99	62	P
111	/86	85	86	15	0860	9	GD/2	143/E	99	53	P
112	/86	87	88	15	0861	9	GD/3	286/F	99	58	P
113	/86	89	90	15	0862	9	GD/1	44/F	99	72	GP
114	/86	91	92	15	0863	9	GD/3	103/F	99	56	GP
115	/86	93	94	15	0864	9	GD/1.5	351/F	99	89	PS
116	/86	95	96	15	0865	9	GD/3	?/?	99	63	P
117	/86	97	98	15	0866	9	GD/1.5	170/I	99	65	P
118	/86	99	100	15	0867	9	GD/1	0/I	98	42	P
119	/86	101	102	15	0868	9	GD/3	240/E	99	36	PS
120	/86	103	104	15	0869	9	GD/1.5	73/E	99	60	P
121	/86	105	106	15	0870	9	GD/1.5	62/E	99	39	P
122	/86	107	108	15	0871	9	GD/3	48/F	99	79	GP
123	/86	109	110	15	0872	9	GD/2	86/F	99	79	GS
124	/86	111	112	15	0873	9	GD/2	255/F	99	35	P
125	/86	1	2	16	0874	9	GD/3	?/?	99	19	S
126.17	/86	3	4	16	0875A	9	GD/3	?/?	99	21	P
126.18	/86	5	6	16	0877	9	GD/3	0/E	68	16	S
127.16	/86	7	8	16	0875B	9	GD/3	36/I	99	38	P
127.18	/86	9	10	16	0876	9	GD/3	42/E	85	40	P
128	/86	11	12	16	0878	9	GD/3	51/E	99	23	S
129	/86	13	14	16	0879	9	GD/3	37/E	99	41	P
130	/86	15	16	16	0880	9	GD/2	14/E	96	47	P
131	/86	17	18	16	0881	9	GD/2	0/E	99	32	PS
132	/86	19	20	16	0882	9	GD/2	0/E	99	60	PS
133	/86	21	22	16	0883	9	GD/3	289/F	99	48	P
134.17	/86	23	24	16	0884	9	GD/3	382/F	99	88	G
134.18	/86	25	26	16	0885	9	GD/3	0/A	46	94	G
135.07	/86	27	28	16	0887	9	GD/1.5	43/F	99	79	P
135.17	/86	29	30	16	0886	9	GD/3	?/?	99	85	G
135.18	/86	31	32	16	0888	9	GD/3	0/E	63	81	GP
136.07	/86	33	34	16	0889	9	GD/1.5	100/F	99	68	PS
136.16	/86	35	36	16	0890	9	GD/3	232/I	99	77	GS
136.18	/86	37	38	16	0891	9	GD/3	38/E	80	68	GP
137.06	/86	39	40	16	0892	9	GD/1	0/F	99	46	PS
137.16	/86	41	42	16	0893	9	GD/2	90/J	94	79	GS
138	/86	43	44	16	0894	9	GD/3	0/E	99	38	P
139	/86	45	46	16	0895	9	GD/3	85/E	99	65	P
140	/86	111	47	16	0896	9	GD/3	146/E	99	41	P
141	/86	48	49	16	0897	9	GD/1.5	11/E	99	59	P
142	/86	50	51	16	0898	9	GD/3	156/F	99	69	P
143	/86	52	53	16	0899	9	GD/3	323/F	99	48	PS
144	/86	54	55	16	0900	9	GD/3	?/?	99	72	GP
145	/86	56	57	16	0901	9	GD/3	176/I	99	60	P
146.16	/86	58	59	16	0902	9	GD/3	225/J	99	67	P
146.18	/86	60	61	16	0903	9	GD/3	43/E	91	62	GP
147.16	/86	62	63	16	0904	9	GD/2	137/K	78	61	GP

JUL day	YR	IR no.	VIS no.	Vol	IA#	Sat	Nav. Conf.	Nav. Acc.	%D	% clr	Qual.
147.18	/86	64	65	16	0905	9	GD/3	16/E	99	61	P
148	/86	66	67	16	0906	9	GD/3	0/E	99	44	P
149	/86	68	69	16	0907	9	GD/3	152/E	99	49	PS
150	/86	112	70	16	0908	9	GD/2	0/<E	0	57	0
151	/86	71	72	16	0909	9	GD/2	108/F	99	38	PS
152	/86	73	74	16	0910	9	GD/3	289/F	99	64	P
153	/86	75	76	16	0911	9	GD/3	?/?	99	44	P
154	/86	77	78	16	0912	9	GD/2	27/E	68	13	S
155	/86	79	80	16	0913	9	GD/3	143/E	85	54	GP
156	/86	81	82	16	0914	9	GD/3	57/E	99	47	P
157	/86	83	84	16	0915	9	GD/3	42/E	99	71	GP
158	/86	85	86	16	0916	9	GD/3	60/E	99	68	GP
159	/86	87	88	16	0917	9	OK/1.5	77/I	99	39	P
160	/86	89	90	16	0918	9	GD/3	0/F	99	54	GP
161	/86	91	92	16	0919	9	GD/2	265/F	99	48	P
162	/86	93	94	16	0920	9	GD/3	?/E	99	20	P
163	/86	95	96	16	0921	9	GD/3	55/E	61	66	P
164	/86	97	98	16	0922	9	GD/3	122/I	99	83	GP
165	/86	99	100	16	0923	9	GD/1.5	0/E	95	25	P
166	/86	101	102	16	0924	9	GD/3	57/E	99	72	GP
167	/86	103	104	16	0926	9	GD/3	61/E	99	67	P
168	/86	105	106	16	0927	9	GD/3	?/?	99	42	P
169	/86	ND			NO	TAPE					
170	/86	107	108	16	0928	9	GD/1.5	97/F	99	56	P
171	/86	109	110	16	0929	9	GD/2	329/F	99	68	P
172.17	/86	1	2	17	0930	9	GD/3	?/?	99	63	GP
172.18	/86	3	4	17	0931	9	GD/3	25/E	55	67	GP
173	/86	5	6	17	0932	9	GD/3	?/?	99	66	GP
174	/86	7	8	17	0933	9	GD/3	0/E	89	75	PG
175	/86	9	10	17	0934	9	GD/2	30/E	99	90	PG
176	/86	11	12	17	0935	9	GD/3	0/E	99	70	P
177	/86	13	14	17	0936	9	GD/1.5	16/E	99	53	P
178	/86	15	16	17	0937	9	OK/1.5	0/E	99	77	PG
179	/86	17	18	17	0938	9	OK/3	32/F	99	72	GP
180	/86	19	20	17	0939	9	OK/3	55/A	32	43	P
181	/86	21	22	17	0940	9	GD/3	8/A	49	38	P
182	/86	23	24	17	0941	9	GD/3	20/E	65	42	P
183	/86	25	26	17	0942	9	GD/2	41/E	82	44	P
184	/86	27	28	17	0943	9	GD/3	55/E	99	61	P
185	/86	29	30	17	0944	9	GD/3	96/E	99	66	PS
186	/86	31	32	17	0945	9	GD/3	226/E	99	48	P
187	/86	33	34	17	0946	9	GD/3	24/E	99	63	P
188	/86	35	36	17	0947	9	GD/2	0/E	99	57	P
189	/86	37	38	17	0948	9	GD/3	0/A	25	44	S
190	/86	39	40	17	0949	9	GD/3	?/?	99	46	P
191	/86	41	42	17	0950	9	GD/3	0/A	59	48	P
192	/86	43	44	17	0951	9	GD/3	107/A	76	45	P
193	/86	45	46	17	0952	9	OK/3	0/E	93	55	P
194	/86	47	48	17	0953	9	GD/3	0/E	99	77	GP
195	/86	49	50	17	0954	9	GD/2	104/E	99	95	G
196	/86	51	52	17	0955	9	GD/2	19/E	99	50	P
197	/86	53	54	17	0956	9	GD/3	0/E	99	68	GP
198	/86	55	56	17	0957	9	GD/3	208/F	99	92	G
199	/86	57	58	17	0958	9	GD/1	333/F	97	93	SG

Sea Surface Temperature Atlas Catalogue Area F 1986

JUL day	YR	IR no.	VIS no.	Vol	IA#	Sat	Nav. Conf.	Nav. Acc.	%D	% clr	Qual.
200	/86	59	60	17	0959	9	GD/3	20/E	53	88	GS
201	/86	ND			NO	TAPE					
202	/86	61	62	17	0960	9	GD/3	72/A	88	64	P
203	/86	63	64	17	0961	9	GD/2	0/E	99	78	GP
204	/86	65	66	17	0962	9	GD/3	39/E	99	71	P
205	/86	67	68	17	0963	9	GD/3	0/E	99	78	G
206	/86	69	70	17	0964	9	OK/3	?/?	99	0	S
207	/86	71	72	17	0965	9	GD/3	14/F	99	76	GP
208	/86	73	74	17	0966	9	GD/3	259/F	99	71	P
209	/86	75	76	17	0967	9	GD/3	?/?	99	78	GP
210	/86	77	78	17	0968	9	GD/3	228/I	99	40	P
211	/86	79	80	17	0969	9	GD/3	33/I	99	59	P
212	/86	81	82	17	0970	9	GD/2	?/?	90	68	GP
213	/86	83	84	17	0971	9	GD/3	48/H	99	33	P
214	/86	85	86	17	0972	9	GD/3	20/E	99	77	P
215	/86	87	88	17	0973	9	GD/1.5	97/F	99	93	GP
216	/86	89	90	17	0974	9	GD/3	?/?	99	56	P
217	/86	91	92	17	0975	9	GD/3	188/F	99	77	GP
218.17	/86	93	94	17	0976	9	GD/3	?/?	99	90	GP
218.18	/86	95	96	17	0977	9	GD/2	62/A	30	86	P
219	/86	97	98	17	0978	9	GD/3	?/?	60	72	P
220	/86	99	100	17	0979	9	GD/1.5	115/I	99	52	P
221	/86	101	102	17	0980	9	GD/3	0/E	94	49	P
222	/86	103	104	17	0981	9	GD/2	113/E	99	67	GP
223	/86	105	106	17	0982	9	GD/2	178/E	99	81	P
224	/86	107	108	17	0983	9	GD/3	282/E	99	77	GP
225	/86	109	110	17	0984	9	GD/2	0/F	99	86	GP
226	/86	111	112	17	0985	9	GD/3	132/F	99	80	GP
227	/86	1	2	18	0986	9	OK/3	327/F	99	77	GP
228	/86	3	4	18	0987	9	OK/3	?/?	99	75	P
229	/86	5	6	18	0988	9	GD/3	170/I	99	87	GP
230	/86	7	8	18	0989	9	GD/3	130/I	99	92	GP
231	/86	9	10	18	0990	9	GD/3	0/E	99	65	P
232	/86	11	12	18	0991	9	GD/3	0/E	99	41	P
233	/86	13	14	18	0992	9	GD/2	43/E	99	85	G
234	/86	15	16	18	0993	9	GD/3	0/E	99	65	P
235	/86	17	18	18	0994	9	GD/3	?/?	99	30	PS
236	/86	19	20	18	0995	9	OK/1.5	298/F	99	49	PS
237	/86	21	22	18	0996	9	GD/3	?/?	99	46	P
238	/86	23	24	18	0997	9	GD/3	17/E	68	56	P
239	/86	25	26	18	0998	9	GD/3	?/?	99	88	GP
240.16	/86	27	28	18	0999	9	GD/3	60/J	79	47	P
240.18	/86	29	30	18	1000	9	GD/3	0/E	99	36	P
241	/86	31	32	18	1001	9	OK/3	55/E	99	62	P
242	/86	33	34	18	1002	9	OK/3	11/E	99	70	GP
243	/86	35	36	18	1003	9	GD/2	15/F	99	80	GP
244	/86	37	38	18	1004	9	GD/2	0/F	99	83	PG
245	/86	39	40	18	1005	9	GD/3	240/F	99	55	P
246	/86	41	42	18	1006	9	GD/3	?/?	99	56	P
247	/86	ND			NO	TAPE					
248	/86	43	44	18	1007	9	GD/2	0/A	80	92	GP
249	/86	ND			NO	TAPE					
250	/86	45	46	18	1008	9	GD/3	250/A	99	62	P
251	/86	47	48	18	1009	9	GD/3	70/E	99	68	P

JUL day	YR	IR no.	VIS no.	Vol	IA#	Sat	Nav. Conf.	Nav. Acc.	%D	% clr	Qual.
252	/86	49	50	18	1010	9	GD/1	?/E	97	10	P
253	/86	51	52	18	1011	9	GD/3	62/F	99	59	P
254	/86	53	54	18	1012	9	PR/1.5	88/F	99	58	GP
255	/86	55	56	18	1013	9	GD/3	?/F	99	62	P
256	/86	57	58	18	1014	9	GD/1.5	0/A	59	61	P
257.17	/86	59	60	18	1015	9	GD/2	97/K	99	69	P
257.18	/86	61	62	18	1016	9	GD/3	73/A	75	66	P
258	/86	63	64	18	1017	9	GD/3	30/A	92	72	P
259	/86	65	66	18	1018	9	GD/3	0/E	99	57	P
260	/86	67	68	18	1019	9	GD/2	0/E	99	28	P
261	/86	69	70	18	1020	9	OK/2	26/E	99	52	P
262	/86	71	72	18	1021	9	GD/2	70/F	99	64	GP
263	/86	73	74	18	1022	9	GD/3	138/F	99	80	P
264	/86	75	76	18	1023	9	GD/3	335/F	99	73	PS
265	/86	77	78	18	1024	9	GD/3	?/F	99	55	P
266	/86	ND			NO	TAPE					
267	/86	79	80	18	1025	9	GD/1.5	0/K	99	42	P
268	/86	81	82	18	1026	9	GD/2	259/A	99	59	PS
269	/86	83	84	18	1027	9	GD/3	155/E	99	65	P
270	/86	85	86	18	1028	9	GD/1.5	110/I	99	35	S
271	/86	87	88	18	1029	9	GD/3	?/A	99	41	PS
272	/86	89	90	18	1030	9	GD/3	148/F	99	66	PS
273	/86	91	92	18	1031	9	GD/1.5	190/F	99	73	GS
274	/86	93	94	18	1032	9	GD/3	246/E	48	12	S
275	/86	95	96	18	1033	9	GD/3	?/?	65	63	P
276	/86	97	98	18	1034	9	GD/1.5	?/?	99	53	P
277	/86	99	100	18	1035	9	GD/2	202/E	99	48	P
278	/86	101	102	18	1036	9	GD/2	115/E	99	13	P
279	/86	103	104	18	1037	9	GD/3	260/F	99	44	P
280	/86	NA			1038	9	GD/2	95/A			
281	/86	105	106	18	1039	9	GD/1.5	0/F	99	65	GP
282	/86	107	108	18	1040	9	GD/2	136/F	99	45	P
283	/86	109	110	18	1041	9	GD/3	248/E	41	38	S
284	/86	111	112	18	1042	9	GD/2	0/E	59	61	P
285	/86	1	2	19	1043	9	GD/2	108/A	76	46	P
286	/86	3	4	19	1044	9	GD/1.5	114/I	99	68	GP
287	/86	5	6	19	1045	9	GD/2	67/E	99	70	P
288	/86	7	8	19	1046	9	GD/2	35/E	99	34	P
289	/86	9	10	19	1047	9	GD/3	136/E	99	64	P
290	/86	11	12	19	1048	9	GD/1	0/E	99	47	P
291	/86	13	14	19	1049	9	GD/3	240/I	99	19	P
292	/86	15	16	19	1050	9	GD/3	322/F	99	29	P
293.17	/86	17	18	19	1051	9	GD/3	?/?	99	51	P
293.19	/86	19	20	19	1052	9	GD/3	0/A	52	68	P
294	/86	21	22	19	1053	9	GD/3	176/I	99	74	GP
295	/86	23	24	19	1054	9	GD/2	0/E	87	31	P
296	/86	25	26	19	1055	9	GD/3	?/?	99	37	P
297	/86	27	28	19	1056	9	GD/2	170/E	99	22	P
298	/86	29	30	19	1057	9	GD/3	217/E	99	32	P
299	/86	31	32	19	1058	9	GD/1.5	73/F	99	37	GS
300	/86	33	34	19	1059	9	GD/1.5	0/F	99	46	P
301	/86	35	36	19	1060	9	GD/1.5	292/E	99	24	P
302	/86	37	38	19	1061	9	GD/3	18/A	46	35	P
303	/86	39	40	19	1062	9	GD/3	195/A	63	20	P

JUL day	YR	IR no.	VIS no.	Vol	IA#	Sat	Nav. Conf.	Nav. Acc.	%D	% clr	Qual.
304	/86	41	42	19	1063	9	GD/3	0/E	80	36	PS
305	/86	43	44	19	1064	9	GD/3	34/A	97	41	P
306	/86	45	46	19	1065	9	GD/1.5	149/E	99	18	P
307	/86	47	48	19	1066	9	GD/3	96/E	99	46	P
308	/86	49	50	19	1067	9	GD/3	62/I	99	24	P
309	/86	51	52	19	1068	9	OK/3	18/F	99	28	P
310	/86	53	54	19	1069	9	GD/1.5	147/F	99	40	P
311	/86	55	56	19	1070	9	GD/2	284/E	41	14	S
312	/86	57	58	19	1071	9	GD/3	?/?	99	37	GS
313	/86	59	60	19	1072	9	GD/1	145/I	99	13	S
314	/86	61	62	19	1073	9	GD/3	0/E	92	26	P
315	/86	63	64	19	1074	9	GD/2	203/E	99	27	P
316	/86	65	66	19	1075	9	GD/3	82/E	99	34	P
317	/86	67	68	19	1076	9	GD/1.5	0/E	99	13	P
318	/86	69	70	19	1077	9	GD/3	28/E	99	8	S
319	/86	71	72	19	1078	9	GD/3	158/F	99	16	P
320	/86	73	74	19	1079	9	GD/3	?/?	99	14	P
321	/86	75	76	19	1080	9	GD/3	?/?	99	4	S
322	/86	77	78	19	1081	9	GD/3	31/E	68	7	P
323	/86	79	80	19	1082	9	GD/3	25/I	99	32	P
324	/86	81	82	19	1083	9	GD/3	0/E	99	8	P
325	/86	83	84	19	1084	9	GD/3	90/H	99	5	S
326	/86	85	86	19	1085	9	GD/3	74/I	99	4	P
327	/86	87	88	19	1086	9	GD/3	35/F	99	35	PS
328	/86	89	90	19	1087	9	GD/3	?/?	99	3	S
329	/86	91	92	19	1088	9	GD/3	310/F	99	16	P
330	/86	93	94	19	1089	9	GD/3	?/?	99	27	PS
331	/86	95	96	19	1090	9	GD/3	40/E	63	12	P
332	/86	97	98	19	1091	9	GD/3	?/?	80	21	P
333	/86	99	100	19	1092	9	GD/3	?/?	97	22	PS
334	/86	101	102	19	1093	9	GD/2	127/E	99	9	S
335	/86	ND			NO	TAPE					
336	/86	103	104	19	1094	9	GD/2	0/F	99	24	PS
337	/86	105	106	19	1095	9	GD/1.5	0/F	99	11	PS
338	/86	107	108	19	1096	9	OK/3	440/F	99	29	P
339	/86	109	110	19	1097	9	GD/3	0/A	41	3	S
340	/86	1	2	20	1098	9	GD/3	139/A	59	19	S
341	/86	3	4	20	1099	9	GD/3	0/A	76	20	PS
342	/86	5	6	20	1100	9	GD/3	0/E	93	3	S
343	/86	7	8	20	1101	9	GD/3	0/E	99	12	PS
344	/86	9	10	20	1102	9	GD/3	17/H	99	0	S
345	/86	11	12	20	1103	9	GD/3	117/F	99	17	PS
346	/86	13	14	20	1104	9	OK/3	76/F	99	4	S
347	/86	15	16	20	1105	9	GD/3	180/F	99	5	S
348	/86	17	18	20	1106	9	GD/3	328/F	99	8	S
349	/86	19	20	20	1107	9	GD/1.5	?/?	99	9	P
350	/86	21	22	20	1108	9	GD/3	50/E	71	6	S
351	/86	23	24	20	1109	9	GD/3	0/E	89	32	P
352	/86	25	26	20	1110	9	GD/3	?/?	77	31	P
353	/86	27	28	20	1111	9	GD/3	112/H	99	29	P
354	/86	29	30	20	1112	9	GD/1.5	14/I	99	12	P
355	/86	31	32	20	1113	9	OK/3	0/F	99	13	P
356	/86	33	34	20	1114	9	GD/3	131/F	99	5	S
357	/86	35	36	20	1115	9	PR/3	269/F	99	7	PS

JUL day	YR	IR no.	VIS no.	Vol	IA#	Sat	Nav. Conf.	Nav. Acc.	%D	% clr	Qual.
358	/86	37	38	20	1116	9	OK/3	174/E	50	10	S
359	/86	39	40	20	1117	9	GD/3	337/I	99	29	P
360	/86	41	42	20	1118	9	GD/3	?/?	84	10	P
361	/86	43	44	20	1119	9	GD/3	74/E	99	1	S
362	/86	45	46	20	1120	9	GD/3	0/E	99	11	PS
363	/86	47	48	20	1121	9	GD/3	207/E	99	22	P
364	/86	49	50	20	1122	9	GD/2	16/F	99	7	S
365	/86	51	52	20	1123	9	GD/3	57/F	99	9	P

Appendix 3: Catalogue of Daily SST and Visible Images in Area G

JUL day	YR	IR no.	VIS no.	Vol	IA#	Sat	Nav. Conf.	Nav. Acc.	%D	% clr	Qual.
001	/84	ND		NO TAPE							
002	/84	ND		NO TAPE							
003	/84	ND		NO TAPE							
004	/84	ND		NO TAPE							
005	/84	ND		NO TAPE							
006	/84	ND		NO TAPE							
007	/84	ND		NO TAPE							
008	/84	ND		NO TAPE							
009	/84	ND		NO TAPE							
010	/84	ND		NO TAPE							
011	/84	ND		NO TAPE							
012	/84	ND		NO TAPE							
013	/84	ND		NO TAPE							
014	/84	ND		NO TAPE							
015	/84	ND		NO TAPE							
016	/84	ND		NO TAPE							
017	/84	ND		NO TAPE							
018	/84	ND		NO TAPE							
019	/84	ND		NO TAPE							
020	/84	ND		NO TAPE							
021	/84	ND		NO TAPE							
022	/84	ND		NO TAPE							
023	/84	ND		NO TAPE							
024	/84	ND		NO TAPE							
025	/84	11	12	1	0001	7	GD/0	300/E	27	18	
026	/84	13	14	1	0002	7	GD/2	163/F	47	7	
027	/84	15	16	1	0003	7	OK/3	72/F	66	20	
028	/84	17	18	1	0004	7	GD/3	>512/E	86	15	
029	/84	19	20	1	0005	7	OK/1.5	430/F	99	30	
030.17	/84	21	22	1	0006	7	OK/1	>512/E	99	10	
030.19	/84	NA			0007	7	OK/3	190/E			
031	/84	NA			0008	7	GD/3	257/H			
032	/84	23	24	1	0009	7	GD/2	26/E	3	13	
033	/84	25	26	1	0010	7	GD/3	57/E	24	3	
034	/84	27	28	1	0011	7	PR/1.5	17/E	43	6	
035	/84	29	30	1	0012	7	OK/1	46/F	62	30	
036	/84	31	32	1	0013	7	OK/1.5	312/E	81	36	
037	/84	33	34	1	0014	7	GD/3	>512/I	99	37	
038	/84	35	36	1	0015	7	GD/0	271/I	99	24	
039	/84	NA			0016	7	OK/3	200/E			
040	/84	37	38	1	0017	7	OK/3	10/E	1	44	
041	/84	39	40	1	0018	7	OK/3	22/E	21	14	
042	/84	41	42	1	0019	7	OK/2	189/E	39	13	
043	/84	43	44	1	0020	7	OK/2	93/F	59	9	
044	/84	45	46	1	0021	7	OK/2	134/F	79	27	
045	/84	ND		NO TAPE							
046	/84	47	48	1	0022	7	OK/3	200/I	99	29	
047.17	/84	49	50	1	0023	7	OK/2	54/I	99	35	
047.19	/84	NA			0024	7	GD/3	49/E			
048	/84	NA			0025	7	OK/3	50/E			
049	/84	51	52	1	0027	7	PR/3	0/E	17	8	
050	/84	53	54	1	0026	7	PR/3	122/E	36	39	
051	/84	55	56	1	0028	7	OK/3	155/H	55	38	

JUL day	YR	IR no.	VIS no.	Vol	IA#	Sat	Nav. Conf.	Nav. Acc.	%D	% clr	Qual.
052	/84	57	58	1	0029	7	OK/3	122/F	75	16	
053	/84	59	60	1	0030	7	OK/1.5	79/K	96	30	
054	/84	61	62	1	0031	7	GD/3	243/I	99	29	
055	/84	63	64	1	0032	7	GD/3	257/J	99	30	
056	/84	NA			0033	7	PR/1	209/B			
057	/84	65	66	1	0034	7	GD/3	35/H	14	78	
058	/84	67	68	1	0035	7	GD/3	65/H	33	8	
059	/84	69	70	1	0036	7	OK/1	134/E	53	6	
060	/84	71	72	1	0037	7	OK/1.5	>512/NN	73	67	
061	/84	73	74	1	0038	7	PR/3	10/E	92	34	
062	/84	75	76	1	0039	7	PR/1.5	244/I	99	42	
063	/84	77	78	1	0040	7	GD/3	95/K	99	64	
064	/84	ND		NO TAPE							
065	/84	79	80	1	0041	7	GD/3	0/E	11	42	
066	/84	81	82	1	0042	7	OK/1.5	215/H	31	21	
067	/84	83	84	1	0043	7	PR/3	90/F	51	58	
068	/84	85	86	1	0044	7	GD/1	164/F	71	28	
069	/84	87	88	1	0045	7	GD/1.5	342/F	90	34	
070	/84	89	90	1	0046	7	GD/2	296/E	99	64	
071	/84	91	92	1	0047	7	OK/1.5	>512/F	99	38	
072	/84	NA			0048	7	OK/3	0/E			
073	/84	93	94	1	0049	7	GD/2	0/E	10	24	
074	/84	95	96	1	0050	7	OK/3	114/E	29	46	
075	/84	1	2	2	0051	7	OK/3	198/F	49	27	
076	/84	3	4	2	0052	7	OK/3	29/H	68	35	
077	/84	5	6	2	0053	7	GD/1	>512/F	89	28	
078	/84	7	8	2	0054	7	GD/2	470/E	99	36	
079.17	/84	9	10	2	0056	7	OK/2	304/E	83	31	
079.19	/84	NA			0055	7	OK/3	50/E			
080	/84	NA			0057	7	OK/3	400/E			
081	/84	11	12	2	0058	7	GD/3	120/E	8	36	
082	/84	13	14	2	0059	7	GD/1	100/E	27	16	
083	/84	15	16	2	0060	7	OK/3	0/F	47	49	
084	/84	17	18	2	0061	7	PR/2	70/F	67	40	
085	/84	ND		NO TAPE							
086	/84	19	20	2	0062	7	PR/3	490/F	99	38	
087	/84	21	22	2	0063	7	GD/2	150/K	99	68	
088	/84	ND		NO TAPE							
089	/84	23	24	2	0064	7	GD/3	0/E	6	33	
090	/84	25	26	2	0065	7	OK/1.5	360/E	26	12	
091	/84	27	28	2	0066	7	GD/2	300/E	46	60	
092	/84	29	30	2	0067	7	OK/3	0/F	65	37	
093	/84	31	32	2	0068	7	GD/3	219/F	85	34	
094	/84	33	34	2	0069	7	GD/3	461/F	99	57	
095	/84	35	36	2	0070	7	OK/2	203/I	99	53	
096	/84	NA			0071	7	GD/2	297/H			
097	/84	ND		NO TAPE							
098	/84	ND		NO TAPE							
099	/84	ND		NO TAPE							
100	/84	ND		NO TAPE							
101	/84	37	38	2	0072	7	OK/1	240/E	83	95	
102	/84	39	40	2	0073	7	GD/1	>512/F	99	39	
103	/84	ND		NO TAPE							
104	/84	ND		NO TAPE							

JUL day	YR	IR no.	VIS no.	Vol	IA#	Sat	Nav. Conf.	Nav. Acc.	%D	% clr	Qual.
105	/84	ND		NO TAPE							
106	/84	ND		NO TAPE							
107	/84	41	42	2	0074	7	GD/1.5	0/F	42	51	
108	/84	43	44	2	0075	7	GD/3	167/H	62	53	
109	/84	45	46	2	0076	7	OK/3	54/F	81	2	
110	/84	47	48	2	0077	7	GD/2	357/F	99	39	
111	/84	49	50	2	0078	7	GD/3	214/K	99	71	P
112	/84	NA			0079	7	GD/3	176/E			
113	/84	51	52	2	0080	7	0/0	0/E	1	49	0
114	/84	53	54	2	0081	7	GD/3	76/E	21	32	P
115	/84	55	56	2	0082	7	GD/3	0/E	41	25	P
116.18	/84	57	58	2	0083	7	GD/1.5	0/E	60	43	P
116.20	/84	NA			0084	7	GD/3	0/A			
117.18	/84	59	60	2	0085	7	GD/2	172/F	80	35	P
117.19	/84	NA			0086	7	GD/3	57/A			
118	/84	61	62	2	0087	7	GD/1.5	341/F	99	39	G
119	/84	63	64	2	0088	7	GD/1.5	>512/F	99	74	G
120	/84	ND		NO TAPE							
121	/84	65	66	2	0089	7	GD/2	50/E	0	100	G
122	/84	67	68	2	0090	7	GD/2	186/E	19	79	G
123	/84	69	70	2	0091	7	GD/1.5	36/E	39	39	P
124	/84	71	72	2	0092	7	GD/2	0/F	58	71	G
125	/84	73	74	2	0093	7	GD/1.5	102/F	77	50	P
126.18	/84	75	76	2	0094	7	GD/2	0/K	97	66	GP
126.19	/84	NA			0095	7	GD/1.5	51/A			
127	/84	77	78	2	0096	7	GD/3	0/E	99	63	G
128	/84	NA			0097	7	GD/2	0/E			
129	/84	NA			0098	7	GD/2	110/E			
130	/84	79	80	2	0099	7	GD/3	0/H	16	83	G
131	/84	81	82	2	0100	7	GD/3	155/E	36	62	P
132.11	/84	83	84	2	0101	8	OK/1	76/F	67	76	
132.18	/84	85	86	2	0102	7	GD/3	22/F	56	59	GP
133	/84	87	88	2	0103	7	GD/3	39/F	75	84	G
134	/84	89	90	2	0104	7	GD/3	416/F	95	90	VG
135	/84	91	92	2	0105	7	GD/3	248/K	99	91	G
136	/84	93	94	2	0106	7	PR/2	>512/F	99	86	GP
137	/84	NA			0107	7	GD/3	0/B			
138	/84	95	96	2	0108	7	GD/2	0/E	14	68	P
139	/84	97	98	2	0109	7	GD/3	122/E	34	57	GS
140	/84	99	100	2	0110	7	GD/1	0/E	52	98	VG
141	/84	101	102	2	0111	7	GD/1	0/F	73	99	G
142	/84	103	104	2	0112	7	GD/2	428/I	92	70	P
143	/84	105	106	2	0113	7	GD/3	417/I	99	42	P
144	/84	107	108	2	0114	7	GD/3	121/K	99	77	GP
145	/84	NA			0115	7	GD/2	10/E			
146	/84	109	110	2	0116	7	OK/3	20/E	11	65	P
147	/84	ND		NO TAPE							
148	/84	111	112	2	0117	7	GD/2	47/F	51	71	P
149	/84	113	114	2	0118	7	GD/1.5	15/F	70	63	PS
150	/84	115	116	2	0119	7	GD/2	247/F	90	18	PS
151	/84	1	2	3	0120	7	GD/2	347/I	99	61	S
152	/84	3	4	3	0121	7	OK/2	162/I	99	64	PS
153	/84	NA			0122	7	OK/3	0/E			
154	/84	5	6	3	0123	7	GD/3	0/H	7	38	PS

JUL day	YR	IR no.	VIS no.	Vol	IA#	Sat	Nav. Conf.	Nav. Acc.	%D	% clr	Qual.
155	/84	7	8	3	0124	7	GD/3	O/H	29	11	S
156	/84	9	10	3	0125	7	OK/3	81/H	48	28	PS
157	/84	11	12	3	0126	7	OK/3	0/H	68	79	GP
158	/84	13	14	3	0127	7	OK/2	>512/E	87	74	GP
159	/84	15	16	3	0128	7	OK/3	>512/F	99	48	PS
160.17	/84	17	18	3	0129	7	OK/3	169/I	99	58	P
160.19	/84	NA			0130	7	GD/2	0/E			
161	/84	NA			0131	7	GD/2	0/E			
162.12	/84	19	20	3	0132	8	PR/3	0/E	6	84	?
162.19	/84	21	22	3	0133	7	PR/3	26/E	6	23	S
162.22	/84	23	24	3	0134	8	PR/3	49/E	58	28	P
163	/84	25	26	3	0135	7	OK/3	78/E	26	94	G
164.08	/84	27	28	3	0136	7	PR/2	0/E	7	5	S
164.18	/84	29	30	3	0137	7	GD/3	0/E	46	66	P
165	/84	31	32	3	0138	7	OK/3	28/F	65	70	P
166	/84	33	34	3	0139	7	OK/1.5	204/F	85	40	P
167	/84	35	36	3	0140	7	OK/3	>512/E	99	67	PS
168.17	/84	37	38	3	0141	7	PR/2	135/K	99	75	GP
168.19	/84	NA			0142	7	OK/3	0/E			
169.17	/84	39	40	3	0143	7	GD/3	0/K	87	49	PG
169.19	/84	NA			0144	7	PR/3	0/E			
170	/84	41	42	3	0145	7	PR/3	0/H	4	47	P
171	/84	43	44	3	0146	7	PR/3	275/E	24	57	P
172	/84	45	46	3	0147	7	OK/3	0/F	44	75	P
173	/84	47	48	3	0148	7	OK/3	66/F	63	88	GS
174.18	/84	49	50	3	0149	7	OK/3	224/E	83	96	G
174.20	/84	NA			0150	7	PR/3	0/A			
175	/84	51	52	3	0151	7	OK/3	?/F	99	83	VG
176.17	/84	53	54	3	0152	7	GD/1	?/F	68	76	PG
176.19	/84	NA			0153	7	GD/3	167/E			
177.17	/84	55	56	3	0154	7	PR/3	0/I	92	50	PG
177.19	/84	NA			0155	7	PR/3	?/?			
177.22	/84	57	58	3	0156	6	PR/3	0/F	46	69	PG
178.07	/84	59	60	3	0157	7	OK/1	201/F	97	52	GP
178.12	/84	61	62	3	0158	6	OK/3	86/I	19	62	P
179.07	/84	63	64	3	0159	7	PR/2	?/F	99	74	PS
179.18	/84	65	66	3	0160	7	OK/3	29/E	22	82	P
180	/84	67	68	3	0161	7	PR/3	39/E	42	46	P
181	/84	69	70	3	0162	7	OK/3	39/F	61	88	GP
182	/84	71	72	3	0163	7	PR/3	370/F	81	95	G
183.18	/84	73	74	3	0164	7	PR/3	403/F	99	53	P
183.19	/84	NA			0165	7	OK/3	203/E			
184	/84	NA			0166	7	OK/3	0/E			
185	/84	NA			0167	7	OK/3	0/A			
186	/84	75	76	3	0168	6	OK/3	201/E	10	97	P
187	/84	77	78	3	0169	7	OK/2	0/E	20	82	P
188	/84	79	80	3	0170	7	OK/3	0/E	40	51	P
189	/84	81	82	3	0171	7	OK/3	0/F	60	92	GP
190	/84	83	84	3	0172	7	PR/3	130/F	79	85	GP
191	/84	85	86	3	0173	7	OK/2	399/F	99	70	GP
192	/84	87	88	3	0174	7	OK/1.5	>512/E	99	69	P
193	/84	89	90	3	0175	7	OK/1.5	72/I	95	97	G
194	/84	91	92	3	0176	6	OK/3	93/F	57	68	GP
195	/84	93	94	3	0177	6	GD/3	0/E	28	79	G

JUL day	YR	IR no.	VIS no.	Vol	IA#	Sat	Nav. Conf.	Nav. Acc.	%D	% clr	Qual.
196	/84	95	96	3	0178	7	OK/3	0/E	39	58	GP
197	/84	97	98	3	0179	7	OK/1.5	0/F	59	77	GP
198	/84	99	100	3	0180	7	OK/2	198/F	78	41	S
199	/84	101	102	3	0181	7	OK/3	>512/E	98	89	GP
200	/84	103	104	3	0182	7	OK/3	>512/E	99	64	P
201	/84	NA			0183	7	OK/3	0/E			
202.07	/84	105	106	3	0186	7	GD/3	385/F	95	76	GP
202.19	/84	107	108	3	0185	7	OK/1.5	0/E	0	100	0
202.22	/84	109	110	3	0184	7	OK/2	0/E	44	95	G
203.07	/84	111	112	3	0187	7	GD/1.5	350/F	99	86	GP
203.19	/84	113	114	3	0188	7	GD/3	0/E	18	99	G
204.11	/84	115	116	3	0190	6	GD/3	0/E	52	99	?
204.18	/84	1	2	4	0189	7	OK/3	0/E	38	96	G
205	/84	3	4	4	0191	7	OK/1.5	7/F	58	61	P
206	/84	5	6	4	0192	7	GD/1	28/F	77	72	GP
207.12	/84	7	8	4	0193	6	OK/2	0/A	12	93	G?
207.18	/84	9	10	4	0194	7	OK/1.5	361/F	97	63	PG
207.19	/84	NA			0195	7	OK/1.5	0/A			
208	/84	11	12	4	0196	7	GD/1.5	>512/E	99	78	P
209	/84	13	14	4	0197	7	GD/1.5	74/I	99	93	G
210	/84	NA			0198	7	OK/3	120/B			
211.12	/84	15	16	4	0199	6	OK/3	200/E	8	99	0
211.19	/84	17	18	4	0200	7	OK/3	200/E	17	31	P
212	/84	19	20	4	0201	7	PR/2	400/E	36	73	GP
213.11	/84	21	22	4	0202	6	OK/1.5	113/F	75	81	S
213.18	/84	23	24	4	0203	7	OK/1.5	0/F	57	87	G
214	/84	25	26	4	0204	7	GD/1.5	267/F	77	85	P
215.18	/84	27	28	4	0205	7	GD/2	326/F	96	50	P
215.19	/84	NA			0206	7	OK/2	400/E			
216.18	/84	29	30	4	0207	7	GD/2	400/I	99	91	G
216.19	/84	NA			0208	7	GD/3	120/A			
217.17	/84	31	32	4	0209	7	OK/1	200/I	89	64	P
217.22	/84	NA			0210	7	GD/2	0/A			
218	/84	NA			0211	7	GD/1.5	0/E			
219	/84	33	34	4	0212	7	GD/1.5	60/E	16	99	G
220	/84	35	36	4	0213	7	OK/1.5	0/E	36	87	G
221	/84	114	115	4	0214	7	GD/1.5	0/F	56	44	P
222	/84	37	38	4	0215	6	GD/1	222/F	90	71	PS
223	/84	39	40	4	0216	7	GD/2	341/E	95	81	P
224.18	/84	41	42	4	0217	7	GD/2	>512/E	99	83	PG
224.21	/84	43	44	4	0218	6	GD/1.5	326/E	85	39	GP
225	/84	ND		NO TAPE							
226	/84	ND		NO TAPE							
227	/84	45	46	4	0219	7	GD/1.5	0/E	16	74	P
228	/84	47	48	4	0220	7	GD/1.5	O/E	35	63	P
229.11	/84	49	50	4	0221a	6	GD/1	O/E	46	99	S
229.18	/84	51	52	4	0221b	7	GD/1	50/E	24	95	GS
230	/84	53	54	4	0222	7	GD/1.5	70/E	75	63	P
231	/84	55	56	4	0223	7	PR/1.5	350/E	94	81	PG
232	/84	57	58	4	0224	6	OK/3	200/E	9	33	S
233	/84	59	60	4	0225	6	OK/2	145/E	39	62	S
234	/84	NA			0226	7	GD/1.5	0/E			
235	/84	ND		NO TAPE							
236	/84	61	62	4	0227	7	GD/1.5	54/E	34	69	P

JUL day	YR	IR no.	VIS no.	Vol	IA#	Sat	Nav. Conf.	Nav. Acc.	%D	% clr	Qual.
237	/84	63	64	4	0228	6	OK/1	52/E	32	98	0
238	/84	65	66	4	0229	6	OK/1	320/H	69	88	P
239	/84	67	68	4	0230	7	GD/1.5	280/F	94	43	P
240	/84	69	70	4	0231	7	GD/1	0/E	64	75	PG
241.17	/84	71	72	4	0232	7	GD/2	100/I	99	74	PG
241.19	/84	NA			0233	7	GD/3	48/A			
242	/84	NA			0234	7	GD/3	39/E			
243	/84	ND		NO TAPE							
244	/84	73	74	4	0235	7	GD/2	121/E	33	95	P
245	/84	75	76	4	0236	7	GD/2	193/F	53	65	P
246	/84	77	78	4	0237	7	OK/3	100/E	73	44	PS
247	/84	79	80	4	0238	7	GD/1.5	>512/F	92	69	P
248	/84	81	82	4	0239	7	OK/3	>512/F	99	64	P
249.12	/84	116	83	4	0240	6	GD/1.5	200/E	14	94	0
249.18	/84	84	85	4	0241	7	GD/1.5	98/K	99	96	G
250	/84	86	87	4	0242	7	GD/1.5	0/I	91	91	GP
251	/84	88	89	4	0243	7	GD/1.5	0/E	12	72	G
252	/84	90	91	4	0244	7	GD/2	0/E	31	58	P
253	/84	92	93	4	0245	7	GD/1.5	180/E	52	52	P
254	/84	94	95	4	0246	7	GD/1.5	30/F	71	67	P
255.18	/84	96	97	4	0247	7	GD/1.5	230/F	91	84	PG
255.20	/84	NA			0248	7	GD/3	0/A			
256	/84	NA			0249	7	GD/3	23/A			
257	/84	NA			0250	7	GD/1.5	?/?			
258	/84	NA			0251	7	GD/2	0/E			
259.22	/84	NA			0252	6	GD/1.5	189/E			
259.19	/84	98	99	4	0253	7	OK/1	100/E	9	55	P
260	/84	100	101	4	0254	7	GD/3	300/E	30	65	G
261	/84	102	103	4	0255	7	OK/1	200/F	50	91	GP
262.11	/84	104	105	4	0256	6	OK/3	350/E	28	14	P
262.18	/84	106	107	4	0257	7	GD/3	0/F	70	62	P
263	/84	113	114	5	0258	6	OK/2	52/F	66	88	S
264.19	/84	NA			0259	7	GD/3	17/A			
264.22	/84	108	109	4	0260	6	OK/1.5	19/EA	14	41	P
265	/84	NA			0261	7	GD/2	0/A			
266	/84	ND		NO TAPE							
267	/84	ND		NO TAPE							
268	/84	110	111	4	0262	7	OK/3	100/E	28	42	SP
269	/84	112	113	4	0264	7	OK/1.5	150/E	48	71	PS
270	/84	1	2	5	0265	7	OK/1.5	50/F	67	84	S
271	/84	3	4	5	0266	7	GD/1	277/F	87	41	P
272.11	/84	5	6	5	0267	6	PR/2	97/F	86	48	S
272.99	/84	ND			0268	7	BAD	TAPE			
273	/84	7	8	5	0269	7	OK/1.5	174/I	99	72	S
274.19	/84	NA			0263	7	OK/1	70/E			
274.21	/84	9	10	5	0270	6	OK/3	204/F	76	53	S
275	/84	11	12	5	0271	7	GD/2	0/F	7	94	0
276	/84	13	14	5	0272	7	GD/3	196/E	26	68	S
277	/84	NA			0273	7	GD/3	161/-			
278	/84	NA			0274	7	GD/2	238/A			
279	/84	15	16	5	0275	7	GD/1	202/F	85	68	P
280	/84	NA			0276	7	OK/3	12/A			
281	/84	NA			0277	7	GD/1.5	281/A			
282	/84	17	18	5	0278	7	GD/3	0/I	79	56	S

JUL day	YR	IR no.	VIS no.	Vol	IA#	Sat	Nav. Conf.	Nav. Acc.	%D	% cl	Qual.
283	/84	19	20	5	0279	7	GD/3	0/E	5	37	0
284.19	/84	21	22	5	0280	7	OK/3	261/E	24	53	P
284.??	/84	ND			0281	BAD	TAPE				
285	/84	23	24	5	0282	7	OK/3	336/B	44	57	S
286	/84	25	26	5	0283	7	GD/3	391/E	64	46	S
287	/84	ND		NO TAPE							
288	/84	ND		NO TAPE							
289	/84	NA			0285	7	GD/3	22/E			
290.17	/84	27	28	5	0286	7	OK/2	>512/?	83	65	S
290.19	/84	NA			0287	7	PR/3	0/E			
291	/84	29	30	5	0288	7	OK/3	17/E	3	65	0
292.11	/84	31	32	5	0289	7	PR/3	0/E	58	98	S
292.19	/84	33	34	5	0290	7	PR/3	100/E	23	91	G
293	/84	ND			0291	7	BAD	TAPE			
294	/84	35	36	5	0292	7	GD/1	0/F	62	51	P
295	/84	37	38	5	0293	7	OK/3	228/F	82	32	S
296	/84	NA			0294	7	GD/1.5	>512/?			
297	/84	39	40	5	0295	7	PR/2	250/I	99	57	S
298	/84	NA			0296	7	GD/3	0/E			
299	/84	41	42	5	0297	7	OK/3	260/E	1	36	0
300	/84	43	44	5	0298	7	OK/2	0/E	21	13	S
301	/84	61	62	5	0299	7	PR/2	0/E	40	25	S
302	/84	NA			0300	7	OK/3	55/A			
303	/84	45	46	5	0301	7	OK/1	229/F	80	34	G
304.08	/84	47	48	5	0302	7	OK/2	23/F	53	12	S
304.11	/84	49	50	5	0303	6	OK/2	0/E	38	86	S
304.20	/84	NA			0304	7	GD/2	84/A			
305.08	/84	63	64	5	0305	7	OK/3	0/F	72	44	S
305.11	/84	51	52	5	0306	6	PR/2	0/F	76	90	S
305.18	/84	53	54	5	0307	7	PR/3	240/F	99	66	S
305.19	/84	NA			0308	7	GD/3	0/A			
306.99	/84	ND			0309	BAD	TAPE				
306.17	/84	55	56	5	0310	7	OK/2	35/K	98	42	S
306.19	/84	NA			0311	7	GD/1.5	0/A			
307	/84	ND		NO TAPE							
308	/84	57	58	5	0312	7	PR/3	12/A	20	13	S
309	/84	59	60	5	0313	7	PR/3	0/E	40	35	S
310	/84	65	66	5	0314	7	PR/3	157/H	59	23	S
311	/84	67	68	5	0315	7	PR/3	189/F	79	40	S
312	/84	NA			0316	7	OK/3	0/A?			
313	/84	NA			0317	7	OK/3	0/E			
314	/84	NA			0318	7	OK/3	0/A			
315	/84	69	70	5	0319	7	OK/2	170/B	0	88	0
316	/84	ND			0320	BAD	TAPE				
317	/84	71	72	5	0321	7	PR/3	0/F	38	62	PS
318	/84	ND			0322	BAD	TAPE				
319	/84	ND		NO TAPE							
320	/84	NA			0323	7	OK/1.5	0/M			
321	/84	NA			0324	7	PR/3	316/A			
322	/84	73	74	5	0325	7	?/1	>512/F	99	44	PS
323	/84	NA			0326	7	OK/1.5	0/A			
324	/84	75	76	5	0327	7	OK/2	0/A	17	22	S
325	/84	77	78	5	0328	7	PR/3	31/E	37	8	S
326	/84	79	80	5	0329	7	PR/3	35/F	57	25	S

JUL day	YR	IR no.	VIS no.	Vol	IA#	Sat	Nav. Conf.	Nav. Acc.	%D	% clr	Qual.
327	/84	81	82	5	0330	7	OK/3	192/F	77	39	S
328	/84	NA			0331	7	OK/3	0/F			
329	/84	NA			0332	7	PR/3	0/A			
330	/84	NA			0333	7	GD/2	0/A			
331	/84	NA			0334	7	OK/2	122/A			
332	/84	83	84	5	0335	7	OK/3	463/F	17	18	S
333	/84	85	86	5	0336	7	PR/3	238/E	37	37	S
334	/84	NA			0337	7	OK/1.5	184/?			
335	/84	NA			0338	7	GD/1.5	63/A			
336	/84	ND		NO TAPE							
337	/84	87	88	5	0339	7	PR/1.5	298/I	99	29	S
337	/84	NA			0340	6	PR/3	58/A			
338	/84	NA		0341	7	OK/1.5		0/A			
339	/84	NA			0342	7	GD/2	25/A			
340	/84	ND		NO TAPE							
341	/84	ND		NO TAPE							
342	/84	ND		NO TAPE							
343	/84	NA			0343	7	GD/3	83/A			
344.20	/84	NA			0344	7	OK/3	60/A			
344.22	/84	89	90	5	0345	6	OK/3	0/F	39	32	S
345	/84	91	92	5	0346	7	GD/3	>512/?	99	34	S
346	/84	NA			0347	7	GD/3	18/E			
347	/84	ND			0348	BAD	TAPE				
348	/84	93	94	5	0349	7	GD/3	>512/?	17	19	S
349	/84	95	96	5	0350	7	OK/3	58/E	37	6	S
350	/84	ND			0351	BAD	TAPE				
351	/84	ND			0352	BAD	TAPE				
352	/84	NA			0353	7	GD/3	58/A			
353.08	/84	97	98	5	0354	7	0/1	0/E	69	21	PS
353.18	/84	99	100	5	0355	7	GD/3	>512/?	99	28	PS
354	/84	NA			0356	7	GD/3	>512/?			
355	/84	ND			0357	BAD	TAPE				
356	/84	ND			0358	BAD	TAPE				
357	/84	101	102	5	0359	7	0/1.5	?/?	38	40	S
358.18	/84	103	104	5	0360	7	GD/3	98/E	57	2	0
358.21	/84	105	106	5	0361	7	PR/2	>512/E	94	2	S
359	/84	107	108	5	0362	7	GD/3	224/H	77	41	S
360	/84	ND			0363	BAD	TAPE				
361.18	/84	109	110	5	0364	7	GD/3	>512/?	99	14	S
361.19	/84	NA			0365	7	GD/3	0/A			
362.18	/84	111	112	5	0366	7	GD/3	92/K	99	13	S
362.19	/84	NA			0367	7	GD/3	0/A			
363.17	/84	1	2	6	0368	9	GD/3	76/B	32	9	S
363.19	/84	NA			0369	7	GD/2	90/E			
364	/84	NA			0370	9	GD/2	198/A?			
365.18	/84	NA			0371	9	GD/2	74/?			
365.22	/84	3	4	6	0372	6	OK/3	20/F	43	5	S
366.12	/84	5	6	6	0373	6	OK/3	0/E	13	22	S
366.17	/84	7	8	6	0374	9	GD/2	91/F	83	12	S

Sea Surface Temperature Atlas Catalogue Area G 1985

JUL day	YR	IR no.	VIS no.	Vol	IA#	Sat	Nav. Conf.	Nav. Acc.	%D	% clr	Qual.
001	/85	9	10	6	0375	7	OK/3	72/F	77	38	P
002	/85	11	12	6	0376	7	OK/3	?/?	97	42	PS
003	/85	13	14	6	0377	7	GD/3	?/?	99	33	PS
004	/85	15	16	6	0378	7	GD/3	?/?	99	37	P
005	/85	NA			0379	7	OK/3	30/E			
006	/85	17	18	6	0380	7	GD/3	5/B	17	1	S
007	/85	19	20	6	0381	7	GD/3	174/B	37	32	S
008	/85	ND		NO TAPE							
009	/85	21	22	6	0382	9	GD/3	0/F	75	21	P
010	/85	23	24	6	0383	9	GD/3	225/F	92	33	P
011	/85	25	26	6	0384	9	GD/3	?/?	99	30	PS
012	/85	27	28	6	0385	9	GD/3	?/?	99	59	P
013	/85	NA			0386	9	GD/3	0/A			
014	/85	ND			0387	BAD	TAPE				
015	/85	29	30	6	0388	9	GD/2	?/?	16	99	P
016	/85	31	32	6	0389	9	GD/3	?/?	33	20	P
017	/85	33	34	6	0390	9	GD/3	130/E	50	22	S
018	/85	35	36	6	0391	9	GD/3	54/F	67	11	S
019	/85	37	38	6	0392	9	OK/3	145/F	84	6	S
020	/85	NA			0393	9	OK/1.5	?/?			
021	/85	NA			0394	9	GD/3	88/A			
022	/85	39	40	6	0395	9	GD/2	?/?	99	18	P
023	/85	41	42	6	0396	9	OK/3	0/K	85	45	P
024	/85	43	44	6	0397	9	GD/2	40/E	8	18	SP
025	/85	ND			0398	BAD	TAPE				
026	/85	45	46	6	0399	9	OK/2	0/E	42	32	P
027	/85	47	48	6	0400	9	GD/3	0/F	59	7	S
028	/85	49	50	6	0401	9	GD/2	329/F	75	38	P
029	/85	51	52	6	0402	9	OK/3	265/F	92	35	P
030	/85	NA			0403	9	GD/3	14/A			
031.16	/85	53	54	6	0404	9	GD/3	?/?	99	42	PS
031.18	/85	NA			0405	9	GD/1.5	10/E			
032	/85	55	56	6	0406	9	GD/1.5	50/K	98	54	GP
033	/85	57	58	6	0407	9	GD/1	28/J	44	44	P
034	/85	ND			0408	BAD	TAPE				
035	/85	59	60	6	0409	9	OK/3	50/E	34	19	S
036	/85	61	62	6	0410	9	OK/3	0/F	51	19	S
037	/85	63	64	6	0411	9	OK/3	0/F	68	33	P
038	/85	65	66	6	0412	9	OK/2	163/F	84	29	P
039	/85	113	114	6	0413	GD/3	?/?	99	28		
040	/85	NA			0414	9	OK/2	164/A			
041	/85	67	68	6	0415	9	OK/1.5	100/K	99	23	S
042	/85	NA			0416	9	GD/2	0/E			
043	/85	69	70	6	0417	9	OK/2	0/E	9	15	S
044	/85	71	72	6	0418	9	OK/1.5	0/H	25	6	S
045	/85	73	74	6	0419	9	OK/2	?/?	43	42	P
046	/85	75	76	6	0420	9	GD/2	?/?	59	13	S
047	/85	77	78	6	0421	9	GD/2	?/?	76	37	GP
048	/85	79	80	6	0422	9	PR/3	370/H	93	4	S
049	/85	81	82	6	0423	9	PR/3	?/?	99	35	PS
050	/85	83	84	6	0424	9	OK/3	200/I	99	19	S
051	/85	NA			0425	9	OK/3	0/E			
052	/85	85	86	6	0426	9	OK/3	0/E	2	17	0

JUL day	YR	IR no.	VIS no.	Vol	IA#	Sat	Nav. Conf.	Nav. Acc.	%D	% clr	Qual.
053	/85	87	88	6	0427	9	OK/3	0/H	18	6	S
054	/85	ND			0428	BAD	TAPE				
055	/85	89	90	6	0429	9	OK/1.5	77/E	52	18	S
056	/85	91	92	6	0430	9	OK/3	32/E	69	18	S
057	/85	ND			0431	BAD	TAPE				
058	/85	93	94	6	0432	9	OK/1.5	?/?	99	20	S
059	/85	NA			0433	9	OK/3	23/E			
060	/85	95	96	6	0434	9	0K/3	?/?	97	37	S
061	/85	97	98	6	0435	9	GD/2	67/I	70	31	PS
062	/85	99	100	6	0436	9	OK/3	112/E	12	1	0
063	/85	101	102	6	0437	9	OK/3	125/E	28	2	S
064	/85	103	104	6	0438	9	OK/1	>512/F	90	13	PS
065	/85	105	106	6	0439	9	PR/3	0/F	63	1	S
066	/85	107	108	6	0440	9	OK/3	222/F	79	30	SP
067	/85	109	110	6	0441	9	OK/3	<512/F	96	34	PS
068	/85	NA			0442	9	OK/2	59/A			
069	/85	111	112	6	0443	9	OK/2	?/?	99	20	S
070.16	/85	1	2	7	0444	9	OK/3	200/J	91	48	P
070.18	/85	NA			0445	9	0K/3	73/A			
071	/85	3	4	7	0446	9	OK/3	>512/F	5	27	0
072	/85	5	6	7	0447	9	GD/3	260/E	22	46	P
073	/85	7	8	7	0448	9	GD/1	180/F	39	26	P
074	/85	9	10	7	0449	9	OK/3	>512/A	56	25	P
075	/85	ND		NO TAPE							
076	/85	11	12	7	0450	9	OK/3	380/F	90	30	S
077	/85	13	14	7	0451	9	PR/3	?/?	99	11	S
078.16	/85	15	16	7	0452	9	GD/3	>512/F	99	49	PS
078.18	/85	NA			0453	9	GD/3	69/A			
079	/85	17	18	7	0454	9	GD/3	44/K	97	8	S
080	/85	NA			0455	9	OK/3	57/E			
081	/85	19	20	7	0456	9	GD/3	117/A	15	21	S
082	/85	21	22	7	0457	9	OK/3	120/E	32	18	S
083	/85	23	24	7	0458	9	OK/3	150/F	49	35	P
084	/85	25	26	7	0459	9	OK/3	134/F	66	53	GP
085.17	/85	27	28	7	0461	9	OK/3	235/F	84	18	P
085.18	/85	NA			0460	9	GD/2	0/A			
086	/85	NA			0462	9	GD/3	23/A			
087.16	/85	29	30	7	0463	9	GD/1	306/I	99	28	P
087.18	/85	NA			0464	9	GD/1.5	187/A			
088.06	/85	31	32	7	0465	9	GD/1.5	0/E	82	26	PS
088.18	/85	NA			0466	9	OK/2	32/A			
089	/85	33	34	7	0467	9	GD/1	25/I	94	55	PS
090	/85	35	36	7	0468	9	GD/3	58/E	9	22	P
091	/85	37	38	7	0469	9	GD/3	359/E	27	5	S
092	/85	39	40	7	0470	9	OK/3	105/F	43	10	S
093	/85	41	42	7	0471	9	GD/3	63/F	61	24	P
094.17	/85	43	44	7	0472	9	OK/3	145/F	77	20	P
094.18	/85	NA			0473	9	GD/3	0/<E			
095	/85	45	46	7	0474	9	GD/2	400/F	94	25	P
096	/85	47	48	7	0475	9	GD/3	?/?	99	15	S
097	/85	NA			0476	9	GD/3	0/A			
098	/85	49	50	7	0477	9	OK/1.5	103/K	95	57	P
099	/85	51	52	7	0478	9	GD/3	170/E	3	37	0
100	/85	53	54	7	0479	9	GD/3	0/A	20	43	P

JUL day	YR	IR no.	VIS no.	Vol	IA#	Sat	Nav. Conf.	Nav. Acc.	%D	% clr	Qual.
101	/85	55	56	7	0480	9	GD/3	100/E	37	6	S
101	/85	NA			0481	SAME	AS	ABOVE			
102	/85	ND			0482	9	BAD	TAPE			
103	/85	57	58	7	0483	9	OK/3	73/F	71	32	P
104	/85	59	60	7	0484	9	GD/3	280/F	88	28	S
105	/85	61	62	7	0485	9	GD/1.5	?/?	99	40	PS
106	/85	63	64	7	0486	9	GD/2	?/?	99	38	P
107	/85	65	66	7	0487	9	GD/3	85/K	99	54	GP
108	/85	NA			0488	9	GD/3	19/E			
109	/85	ND			0489	BAD	TAPE				
110	/85	67	68	7	0490	9	GD/3	60/E	30	1	0
111	/85	69	70	7	0491	9	GD/3	54/F	48	17	S
112	/85	71	72	7	0492	9	GD/3	53/F	65	31	P
113	/85	73	74	7	0493	9	GD/2	120/F	81	57	P
114	/85	75	76	7	0494	9	GD/2	?/?	98	34	P
115	/85	77	78	7	0495	9	GD/2	340/E	62	19	S
116	/85	79	80	7	0496	9	GD/3	154/K	99	47	P
117	/85	81	82	7	0497	9	GD/3	0/K	84	46	GP
118	/85	83	84	7	0498	9	GD/3	0/E	7	68	P
119	/85	ND			0499	BAD	TAPE				
120	/85	85	86	7	0500	9	GD/3	0/E	40	22	S
121	/85	87	88	7	0501	9	GD/3	68/E	58	14	S
122	/85	89	90	7	0502	9	GD/3	0/F	75	35	P
123	/85	91	92	7	0503	9	OK/1.5	282/F	92	64	PS
124	/85	NA			0504	9	GD/3	0/A			
125	/85	93	94	7	0505	9	GD/3	184/K	99	57	GP
126	/85	NA			0506	9	GD/3	0/E			
127	/85	NA			0507	9	GD/3	223/E			
128	/85	95	96	7	0508	9	GD/3	?/?	17	20	P
129	/85	97	98	7	0509	9	GD/3	65/E	33	13	P
130	/85	99	100	7	0510	9	GD/3	302/E	51	59	PS
131	/85	101	102	7	0511	9	GD/3	42/F	68	12	S
132	/85	103	104	7	0512	9	GD/3	121/F	85	29	S
133	/85	105	106	7	0513	9	GD/3	?/?	99	46	PS
134	/85	107	108	7	0514	9	GD/1.5	250/K	99	31	PS
135.16	/85	109	110	7	0515	9	GD/2	125/K	99	40	PG
135.18	/85	NA			0516	9	GD/3	0/E			
136	/85	NA			0517	9	GD/3	51/A			
137	/85	111	112	7	0518	9	GD/2	104/E	9	20	0
138	/85	1	2	8	0519	9	GD/1	0/E	12	45	P
139	/85	3	4	8	0520	9	GD/3	0/E	43	17	S
140	/85	5	6	8	0521	9	GD/2	91/F	60	65	P
141	/85	7	8	8	0522	9	GD/1.5	40/F	77	52	P
142	/85	9	10	8	0523	9	GD/1.5	262/F	93	53	P
143	/85	11	12	8	0524	9	GD/3	?/?	99	72	PS
144	/85	13	14	8	0525	9	GD/1	170/K	99	83	S
145	/85	15	16	8	0526	9	GD/3	170/K	96	69	S
146	/85	17	18	8	0527	9	GD/3	50/E	2	24	0
147	/85	19	20	8	0528	9	GD/3	90/E	19	6	S
148	/85	21	22	8	0529	9	GD/3	160/F	36	39	P
149	/85	23	24	8	0530	9	OK/3	0/F	52	24	P
150	/85	25	26	8	0531	9	OK/3	0/F	69	57	P
151	/85	27	28	8	0532	9	OK/3	165/F	86	43	P
152	/85	29	30	8	0533	9	OK/2	450/F	99	57	P

JUL day	YR	IR no.	VIS no.	Vol	IA#	Sat	Nav. Conf.	Nav. Acc.	%D	% clr	Qual.
153.16	/85	31	32	8	0534	9	GD/2	260/K	99	62	PS
153.18	/85	NA			0535	9	GD/3	10/A			
154	/85	33	34	8	0536	9	OK/3	?/?	99	81	GP
155	/85	NA			0537	9	GD/3	0/A			
156	/85	35	36	8	0538	9	OK/1.5	45/E	11	77	0
157	/85	37	38	8	0539	9	OK/3	210/E	28	15	S
158	/85	39	40	8	0540	9	OK/3	10/E	45	36	S
159	/85	41	42	8	0541	9	OK/3	20/F	61	74	P
160	/85	43	44	8	0542	9	PR/3	120/F	78	58	P
161	/85	45	46	8	0543	9	OK/3	>512/?	95	45	S
162	/85	47	48	8	0544	9	OK/3	313/K	99	75	P
163	/85	49	50	8	0545	9	OK/3	?/?	99	54	P
164	/85	NA			0546	9	OK/3	?/?			
165	/85	51	52	8	0547	9	GD/2	150/K	39	84	P
166	/85	53	54	8	0548	9	OK/3	0/E	20	75	P
167	/85	55	56	8	0549	9	OK/3	0/E	36	79	P
168	/85	57	58	8	0550	6	PR/3	170/F	50	60	P
169	/85	59	60	8	0551	9	OK/2	65/F	71	27	P
170	/85	61	62	8	0552	9	OK/1.5	307/E	87	56	P
171	/85	63	64	8	0553	9	PR/3	?/?	99	24	S
172	/85	65	66	8	0554	9	PR/3	?/?	99	52	P
173	/85	NA			0555	9	OK/3	0/A			
174	/85	NA			0556	9	OK/3	0/A			
175	/85	67	68	8	0557	9	OK/3	94/E	13	79	P
176	/85	69	70	8	0558	9	PR/3	34/E	30	62	GP
177	/85	71	72	8	0559	9	OK/3	0/E	46	60	P
178	/85	73	74	8	0560	9	PR/1.5	22/F	63	82	P
179	/85	75	76	8	0561	9	PR/3	118/F	80	80	P
180	/85	77	78	8	0562	9	PR/1.5	364/F	96	63	P
181	/85	79	80	8	0563	9	PR/3	?/?	99	47	PS
182	/85	81	82	8	0564	9	PR/2	150/I	99	58	S
183	/85	83	84	8	0565	9	OK/2	0/I	81	46	PS
184	/85	85	86	8	0566	9	PR/3	0/E	5	59	0
185	/85	87	88	8	0567	9	PR/3	0/F	22	35	PS
186	/85	89	90	8	0568	9	PR/3	31/E	39	80	P
187	/85	91	92	8	0569	9	OK/3	0/F	57	86	GP
188	/85	93	94	8	0570	9	PR/1.5	14/F	73	90	GS
189	/85	95	96	8	0571	9	PR/3	?/?	90	66	P
190	/85	NA			0572	9	OK/3	0/A			
191	/85	97	98	8	0573	9	PR/3	?/?	99	77	P
192	/85	99	100	8	0574	9	PR/2	62/I	95	93	P
193	/85	101	102	8	0575	9	OK/3	53/E	0	100	0
194	/85	103	104	8	0576	9	PR/3	50/E	16	95	G
195	/85	105	106	8	0577	9	PR/3	10/E	33	45	S
196	/85	107	108	8	0578	9	PR/3	162/F	50	50	PS
197	/85	109	110	8	0579	9	PR/3	?/?	67	57	P
198	/85	111	112	8	0580	9	OK/3	170/F	84	83	GP
199	/85	113	114	8	0581	9	OK/3	?/?	99	68	P
200	/85	1	2	9	0582	9	OK/3	?/?	99	48	P
201	/85	3	4	9	0583	9	OK/3	110/I	99	57	P
201	/85	NA			0584	SAME	AS	ABOVE			
202.16	/85	5	6	9	0585	9	OK/2	90/I	80	33	P
202.18	/85	NA			0586	9	PR/3	90/E			
203	/85	7	8	9	0587	9	OK/3	0/E	9	57	P

JUL day	YR	IR no.	VIS no.	Vol	IA#	Sat	Nav. Conf.	Nav. Acc.	%D	% clr	Qual.
204	/85	9	10	9	0588	9	OK/3	90/E	27	61	P
205	/85	11	12	9	0589	9	PR/3	0/E	44	28	P
206	/85	13	14	9	0590	9	PR/3	0/F	60	50	P
207	/85	15	16	9	0591	9	OK/3	63/F	78	37	P
208	/85	17	18	9	0592	9	0K/3	?/?	95	89	GP
209	/85	19	20	9	0593	9	PR/3	?/?	99	69	GP
210	/85	21	22	9	0594	9	GD/1.5	0/F	85	82	S
211	/85	NA			0595	9	OK/3	89/E			
212	/85	23	24	9	0596	9	OK/3	34/E	3	54	0
213	/85	ND		NO TAPE							
214	/85	25	26	9	0597	9	OK/3	42/E	38	14	S
215	/85	27	28	9	0598	9	OK/3	0/F	55	91	G
216.17	/85	29	30	9	0599	9	GD/3	70/F	72	47	P
216.18	/85	NA			0600	9	GD/3	0/A			
217	/85	31	32	9	0601	9	GD/3	209/F	89	67	P
218	/85	33	34	9	0602	9	GD/3	?/?	99	75	P
219	/85	NA			0603	9	GD/3	36/E			
220.16	/85	35	36	9	0604	9	GD/1.5	68/I	99	78	GP
220.18	/85	NA			0605	9	GD/3	?/?			
221	/85	NA			0606	9	GD/3	5/E			
222	/85	37	38	9	0607	9	GD/1.5	0/E	15	56	P
223	/85	39	40	9	0608	9	GD/3	135/E	32	58	S
224	/85	41	42	9	0609	9	GD/3	156/F	49	99	G
225.17	/85	43	44	9	0610	9	GD/3	79/F	66	69	P
225.19	/85	NA			0611	9	GD/3	17/A			
226	/85	45	46	9	0612	9	GD/3	142/F	83	38	P
227	/85	NA			0613	9	GD/3	37/A			
228	/85	NA			0614	9	GD/3	174/E			
229	/85	NA			0615	9	GD/3	0/A			
230	/85	47	48	9	0616	9	GD/3	0/I	78	68	GP
231	/85	49	50	9	0617	9	GD/3	0/E	9	74	P
232	/85	51	52	9	0618	9	GD/3	?/?	26	68	P
233	/85	53	54	9	0619	9	OK/3	0/E	43	5	S
234	/85	55	56	9	0620	9	GD/3	0/E	60	78	P
235	/85	57	58	9	0621	9	GD/3	59/E	77	72	P
236	/85	59	60	9	0622	9	GD/3	?/?	93	46	P
237	/85	61	62	9	0623	9	GD/3	?/?	99	76	P
238	/85	63	64	9	0624	9	GD/3	?/?	99	80	PS
239	/85	65	66	9	0625	9	GD/3	63/I	94	58	PS
240	/85	67	68	9	0626	9	GD/3	70/A	3	74	0
241	/85	69	70	9	0627	9	GD/3	130/E	19	89	P
242	/85	71	72	9	0628	9	GD/3	45/E	36	43	P
243	/85	73	74	9	0629	9	GD/3	28/E	53	59	P
244	/85	75	76	9	0630	9	GD/3	0/E	70	64	S
245	/85	77	78	9	0631	9	GD/3	182/F	87	38	P
246	/85	79	80	9	0632	9	GD/3	?/?	99	61	P
247	/85	81	82	9	0633	9	GD/3	220/I	99	35	PS
248	/85	NA			0634	9	GD/2	60/A			
249	/85	83	84	9	0635	9	GD/3	0/I	95	63	PS
250	/85	85	86	9	0636	9	GD/3	0/E	13	33	P
251	/85	87	88	9	0637	9	GD/3	40/E	29	61	P
252	/85	89	90	9	0638	9	GD/1	>512/E	86	39	PS
253	/85	ND		NO TAPE							
254	/85	ND		NO TAPE							

JUL day	YR	IR no.	VIS no.	Vol	IA#	Sat	Nav. Conf.	Nav. Acc.	%D	% clr	Qual.
255	/85	ND		NO TAPE							
256	/85	ND		NO TAPE							
257	/85	NA			0639	9	GD/3	17/E			
258	/85	NA			0640	9	GD/3	0/A			
259	/85	ND		NO TAPE							
260	/85	ND		NO TAPE							
261	/85	91	92	9	0641	9	GD/3	0/F	39	70	P
262.11	/85	93	94	9	0643	8	GD/1	>512/F	94	62	P
262.17	/85	95	96	9	0642	9	GD/2	75/F	57	60	P
263	/85	NA			0644	9	GD/1.5	0/E			
264	/85	NA			0645	9	GD/1.5	193/E			
265	/85	97	98	9	0646	9	GD/3	?/?	99	67	PS
266	/85	99	100	9	0647	9	GD/2	260/I	99	72	S
267	/85	NA			0648	9	GD/3	9/A			
268	/85	NA			0649	9	GD/3	220/E			
269	/85	101	102	9	0650	9	GD/3	0/E	15	78	P
270	/85	103	104	9	0651	9	GD/3	38/E	32	61	P
271	/85	105	106	9	0652	9	GD/2	326/E	49	71	P
272	/85	107	108	9	0653	9	GD/2	0/F	66	32	P
273	/85	NA			0654	9	GD/3	69/A			
274	/85	109	110	9	0655	9	GD/3	?/?	99	34	S
275	/85	111	112	9	0656	9	GD/3	?/?	99	42	S
276	/85	NA			0657	9	GD/3	0/E			
277	/85	1	2	10	0658	9	GD/3	0/I	83	53	S
278	/85	3	4	10	0659	9	GD/1.5	32/E	8	61	S
279	/85	5	6	10	0660	9	GD/0	?/F	99	64	S
280	/85	7	8	10	0661	9	GD/1	43/E	41	85	GP
281	/85	9	10	10	0662	9	GD/2	0/F	59	26	P
282	/85	11	12	10	0663	9	GD/3	?/?	75	42	S
283	/85	13	14	10	0664	9	GD/3	247/F	92	45	P
284	/85	15	16	10	0665	9	GD/3	?/?	99	42	P
285	/85	17	18	10	0666	9	GD/2	226/I	99	36	P
286	/85	19	20	10	0667	9	GD/3	54/I	84	31	P
287	/85	21	22	10	0668	9	GD/3	274/A	0	59	0
288	/85	ND			0669	BAD	TAPE				
289	/85	23	24	10	0670	9	GD/2	24/E	33	14	S
290	/85	25	26	10	0671	9	GD/2	16/F	50	31	P
291	/85	27	28	10	0672	9	GD/3	22/F	67	67	PS
292	/85	29	30	10	0673	9	GD/3	?/?	84	35	P
293	/85	ND		NO TAPE							
294	/85	NA			0674	9	GD/3	28/E			
295	/85	NA			0675	9	GD/3	111/E			
296.16	/85	31	32	10	0676A	9	GD/3	44/I	73	61	P
296.18	/85	NA			0676B	9	GD/2	20/A			
297	/85	33	34	10	0677	9	GD/3	0/E	10	48	S
298	/85	35	36	10	0678	9	GD/2	269/E	26	57	S
299	/85	37	38	10	0679	9	GD/2	270/F	43	8	S
300	/85	39	40	10	0680	9	GD/2	55/F	60	38	P
301	/85	NA			0681	9	GD/2	22/A			
302	/85	NA			0682	9	GD/2	0/A			
303	/85	41	42	10	0683	9	GD/2	?/?	99	94	G
304	/85	NA			0684	9	GD/3	21/E			
305	/85	NA			0685	9	GD/2	108/M			
306	/85	43	44	10	0686	9	GD/3	35/E	2	83	0

JUL day	YR	IR no.	VIS no.	Vol	IA#	Sat	Nav. Conf.	Nav. Acc.	%D	% clr	Qual.
307	/85	45	46	10	0687	9	GD/1	40/E	20	29	S
308	/85	47	48	10	0688	9	GD/2	0/E	36	35	S
309	/85	49	50	10	0689	9	GD/1.5	50/F	54	74	P
310	/35	51	52	10	0690	9	GD/1	74/F	70	43	P
311	/85	NA			0691	9	GD/3	28/A			
312	/85	NA			0692	9	GD/3	0/A			
313	/85	NA			0693	9	GD/3	95/E			
314	/85	NA			0694	9	GD/3	?/?			
315	/85	NA			0695	9	GD/3	36/E			
316	/85	53	54	10	0696	9	GD/3	20/E	13	17	S
317	/85	55	56	10	0697	9	GD/1.5	77/E	30	0	S
318	/85	57	58	10	0698	9	GD/3	20/E	47	1	S
319	/85	59	60	10	0699	9	GD/3	18/F	63	16	PS
320	/85	61	62	10	0700	9	GD/2	160/F	81	23	S
321	/85	NA			0701	9	GD/3	150/A			
322	/85	NA			0702	9	GD/3	0/A			
323	/85	NA			0703	9	GD/1.5	?/M			
324	/85	63	64	10	0704	9	GD/3	0/J	71	51	P
325	/85	65	66	10	0705	9	GD/2	89/E	7	4	0
326	/85	67	68	10	0706	9	GD/3	8/E	24	0	0
327	/85	69	70	10	0707	9	GD/2	20/E	41	21	PS
328	/85	71	72	10	0708	9	GD/1.5	27/F	58	30	PS
329	/85	73	74	10	0709	9	GD/3	40/F	75	31	P
330	/85	75	76	10	0710	9	GD/2	308/F	92	27	P
331	/85	77	78	10	0711	9	GD/2	?/F	99	44	P
332	/85	79	80	10	0712	9	GD/2	184/I	99	42	PS
333	/85	81	82	10	0713	9	GD/2	0/K	95	41	PS
334	/85	ND		NO TAPE							
335	/85	83	84	10	0714	9	GD/3	0/E	18	28	S
336	/85	85	86	10	0715	9	GD/3	100/H	35	11	S
337	/85	87	88	10	0716	9	GD/1.5	126/F	52	6	S
338	/85	89	90	10	0717	9	GD/1	233/E	69	8	S
339	/85	91	92	10	0718	9	GD/1.5	188/F	87	47	PS
340	/85	93	94	10	0719A	9	GD/1	403/F	99	52	PS
341	/85	NA			0719B	9	GD/3	47/A			
342	/85	NA			0720	9	GD/2	8/E			
343	/85	95	96	10	0721A	9	GD/1	0/K	70	40	PS
344	/85	97	98	10	0721B	9	GD/2	260/A	8	11	0
345	/85	99	100	10	0722A	9	GD/2	74/E	27	20	PS
346	/85	101	102	10	0722B	9	GD/1	41/E	47	77	P
347	/85	103	104	10	0723	9	GD/3	25/F	64	46	P
348	/85	105	106	10	0724	9	GD/1.5	263/E	80	36	P
349	/85	107	108	10	0725	9	GD/3	386/F	98	35	P
350	/85	109	110	10	0726	9	GD/2	?/?	99	48	SP
351	/85	111	112	10	0727	9	GD/2	140/K	99	40	P
352	/85	1	2	11	0728	9	OK/1.5	20/K	93	24	PS
353	/85	3	4	11	0729	9	GD/3	55/E	7	10	0
354	/85	5	6	11	0730	9	GD/3	10/E	24	6	S
355	/85	7	8	11	0731	9	GD/1	300/F	41	19	PS
356	/85	9	10	11	0732	9	GD/3	135/F	59	4	S
357	/85	11	12	11	0733	9	OK/2	16/F	76	15	PS
358	/85	NA			0734	9	GD/3	124/A			
359	/85	13	14	11	0735	9	GD/1.5	?/?	99	48	PS
360	/85	15	16	11	0736	9	GD/2	?/?	99	42	P

JUL day	YR	IR no.	VIS no.	Vol	IA#	Sat	Nav. Conf.	Nav. Acc.	%D	% clr	Qual.
361	/85	17	18	11	0737	9	GD/1.5	?/?	99	13	P
362	/85	19	20	11	0738	9	GD/2	54/E	2	12	0
363	/85	21	22	11	0739	9	GD/3	77/E	18	11	S
364	/85	23	24	11	0740	9	GD/3	208/H	36	3	S
365	/85	25	26	11	0747	9	OK/3	252/F	53	19	PS

JUL day	YR	IR no.	VIS no.	Vol	IA#	Sat	Nav. Conf.	Nav. Acc.	%D	% clr	Qual.
001	/86	27	28	11	0748	9	GD/3	?/?	70	24	S
002	/86	29	30	11	0749	9	GD/1.5	210/F	87	12	PS
003	/86	31	32	11	0750	9	OK/1.5	?/?	99	31	PS
004	/86	NA			0751	9	GD/3	39/E			
005	/86	NA			0752	9	GD/3	?/?			
006	/86	33	34	11	0753	9	GD/1	40/I	87	42	P
007	/86	35	36	11	0754	9	GD/3	45/A	13	17	S
008	/86	37	38	11	0755	9	GD/1.5	150/E	30	9	S
009	/86	39	40	11	0756	9	GD/1.5	150/E	47	22	S
010	/86	41	42	11	0757	9	GD/2	10/F	64	30	P
011	/86	43	44	11	0758	9	GD/1.5	355/F	81	29	P
012	/86	45	46	11	0759	9	GD/3	296/F	98	3	S
013	/86	47	48	11	0760	9	GD/3	?/?	99	10	P
014	/86	49	50	11	0761	9	GD/1	135/K	99	71	GP
015	/86	51	52	11	0762	9	GD/1	?/?	97	55	P
016	/86	53	54	11	0763	9	GD/2	137/A	7	9	0
017	/86	55	56	11	0764	9	GD/2	27/E	24	9	S
018	/86	57	58	11	0765	9	GD/3	216/E	41	6	S
019	/86	59	60	11	0766	9	OK/3	72/E	58	15	S
020	/86	61	62	11	0767	9	GD/1.5	258/I	75	30	PS
021	/86	63	64	11	0768	9	GD/3	?/?	92	11	P
022	/86	65	66	11	0769	9	GD/1.5	?/?	99	14	P
023	/86	NA			0770	9	GD/3	0/E			
024	/86	67	68	11	0771	9	GD/1.5	340/J	99	48	PS
025	/86	69	70	11	0772	9	GD/1.5	55/A	0	27	0
026	/86	71	72	11	0773	9	GD/1	370/E	17	13	P
027	/86	73	74	11	0774	9	OK/1	?/?	35	18	S
028	/86	75	76	11	0775	9	GD/1	?/?	51	63	P
029	/86	77	78	11	0776	9	GD/1.5	0/F	68	35	P
030	/86	79	80	11	0777	9	GD/3	230/E	85	54	P
031	/86	81	82	11	0778	9	GD/3	?/?	99	45	P
032	/86	83	84	11	0779	9	GD/3	?/?	99	35	P
033	/86	85	86	11	0780	9	GD/3	310/J	99	20	PS
034	/86	NA			0781	9	GD/3	0/E			
035	/86	87	88	11	0782	9	GD/3	0/E	10	17	S
036	/86	89	90	11	0783	9	GD/1.5	245/E	27	5	S
037	/86	91	92	11	0784	9	OK/3	114/F	44	0	0
038	/86	NA			0785	9	GD/2	101/A			
039.17	/86	NA			0786B	9	GD/1	?/A			
039.17	/86	NA			0786A	9	GD/1	?/E			
040	/86	93	94	11	0787	9	GD/3	283/F	95	43	PS
041	/86	95	96	11	0788	9	GD/3	?/?	99	36	P
042	/86	97	98	11	0789	9	GD/1.5	221/J	99	40	P
043	/86	99	100	11	0790	9	GD/1.5	39/J	94	63	PS
044	/86	101	102	11	0791	9	GD/3	117/A	3	6	0
045	/86	103	104	11	0792	9	GD/2	45/E	20	2	0
046	/86	105	106	11	0793	9	GD/1.5	240/E	37	18	S
047	/86	107	108	11	0794	9	GD/1.5	48/E	53	16	P
048	/86	NA			0795	9	GD/3	0/A			
049	/86	109	110	11	0796	9	GD/3	211/F	87	35	PS
050	/86	111	112	11	0797	9	GD/3	?/?	99	37	PS
051	/86	1	2	12	0798	9	GD/3	206/I	99	45	P
052	/86	3	4	12	0799	9	GD/2	100/I	97	23	P

JUL day	YR	IR no.	VIS no.	Vol	IA#	Sat	Nav. Conf.	Nav. Acc.	%D	% clr	Qual.
053	/86	NA			0800	9	GD/3	107/E			
054	/86	5	6	12	0801	9	GD/2	87/E	13	46	P
055	/86	ND			0802	BAD	TAPE				
056	/86	7	8	12	0803	9	GD/3	171/E	47	25	S
057	/86	9	10	12	0804	9	GD/3	274/E	63	36	P
058	/86	11	12	12	0805	9	GD/1.5	196/F	81	10	P
059	/86	13	14	12	0806	9	GD/3	?/?	98	53	P
060	/86	15	16	12	0807	9	GD/1.5	?/?	99	10	S
061	/86	17	18	12	0808	9	GD/1.5	320/I	99	3	S
062	/86	19	20	12	0809	9	GD/1.5	0/I	91	15	P
063	/86	21	22	12	0810	9	GD/3	0/E	7	7	S
064	/86	23	24	12	0811	9	GD/3	125/E	23	36	P
065	/86	25	26	12	0812	9	GD/3	42/F	40	0	0
066	/86	27	28	12	0813	9	GD/3	0/E	57	32	S
067	/86	29	30	12	0814	9	GD/1.5	200/F	74	34	P
068	/86	31	32	12	0815	9	GD/1.5	268/F	92	8	S
069	/86	33	34	12	0816	9	GD/3	?/?	99	31	P
070	/86	NA			0817	9	GD/3	260/A			
071	/86	35	36	12	0818	9	GD/3	182/J	91	3	S
072.16	/86	37	38	12	0819	9	GD/3	0/J	39	44	P
072.18	/86	39	40	12	0820	9	GD/3	37/E	0	48	0
073	/86	41	42	12	0821	9	GD/3	65/H	16	6	S
074	/86	43	44	12	0822	9	GD/3	72/E	34	14	S
075	/86	45	46	12	0823	9	GD/3	0/F	50	22	S
076	/86	47	48	12	0824	9	GD/3	133/F	68	21	S
077	/86	49	50	12	0825	9	GD/3	262/F	85	20	S
078	/86	51	52	12	0826	9	OK/1.5	407/F	99	41	PS
079	/86	53	54	12	0827	9	GD/3	243/I	99	22	P
080.16	/86	55	56	12	0828	9	GD/3	83/I	99	17	P
080.18	/86	NA			0829	9	GD/3	90/A			
081	/86	NA			0830	9	GD/2	0/A			
082	/86	57	58	12	0831	9	GD/2	25/E	11	22	P
083	/86	59	60	12	0832	9	GD/3	119/E	28	4	S
084	/86	61	62	12	0833	9	GD/3	74/F	46	14	S
085	/86	63	64	12	0834	9	GD/3	?/?	62	11	S
086	/86	65	66	12	0835	9	GD/1.5	270/E	79	28	P
087	/86	67	68	12	0836	9	OK/3	?/?	96	25	PS
088	/86	NA			0837	9	GD/3	73/A			
089.16	/86	69	70	12	0838	9	OK/3	?/?	99	46	PS
089.18	/86	NA			0839	9	GD/3	168/A			
090.16	/86	71	72	12	0840	9	GD/3	314/J	71	61	GP
090.18	/86	NA			0841	9	GD/3	73/A			
091	/86	73	74	12	0842	9	GD/3	0/E	6	3	0
092	/86	ND				NO	TAPE				
093	/86	75	76	12	0843	9	GD/3	163/F	40	4	S
094	/86	77	78	12	0844	9	GD/3	0/E	57	17	S
095	/86	79	80	12	0845	9	GD/1.5	23/F	75	37	PS
096	/86	81	82	12	0846	9	GD/2	380/E	91	45	P
097	/86	83	84	12	0847	9	GD/2	?/?	99	21	P
098	/86	85	86	12	0848	9	GD/1.5	168/K	99	44	P
099	/86	87	88	12	0849	9	GD/1.5	22/K	97	50	P
100	/86	89	90	12	0850	9	GD/1	40/A	1	72	0
101	/86	91	92	12	0851	9	GD/3	145/E	18	71	P
102	/86	93	94	12	0852	9	GD/3	21/E	35	72	P

JUL day	YR	IR no.	VIS no.	Vol	IA#	Sat	Nav. Conf.	Nav. Acc.	%D	% clr	Qual.
103	/86	ND				NO	TAPE				
104	/86	95	96	12	0853	9	GD/3	41/F	69	54	S
105	/86	NA			0854	9	GD/1.5	416/E			
106	/86	NA			0855	9	GD/2	152/A			
107	/86	97	98	12	0856	9	GD/3	?/?	99	28	PS
108	/86	99	100	12	0857	9	GD/1	86/K	98	43	PS
109	/86	NA			0858	9	GD/1.5	0/E			
110	/86	101	102	12	0859	9	GD/2	65/E	13	77	P
111	/86	103	104	12	0860	9	GD/2	143/E	31	17	P
112	/86	105	106	12	0861	9	GD/3	286/F	47	73	P
113	/86	107	108	12	0862	9	GD/1	44/F	64	77	P
114	/86	109	110	12	0863	9	GD/3	103/F	81	87	GP
115	/86	111	112	12	0864	9	GD/1.5	351/F	98	84	P
116	/86	1	2	13	0865	9	GD/3	?/?	99	80	GS
117	/86	3	4	13	0866	9	GD/1.5	170/I	99	59	PS
118	/86	5	6	13	0867	9	GD/1	0/I	80	27	PS
119	/86	7	8	13	0868	9	GD/3	240/E	8	15	S
120	/86	9	10	13	0869	9	GD/1.5	73/E	25	40	PS
121	/86	11	12	13	0870	9	GD/1.5	62/E	42	22	P
122	/86	13	14	13	0871	9	GD/3	48/F	60	46	PS
123	/86	15	16	13	0872	9	GD/2	86/F	76	50	P
124	/86	17	18	13	0873	9	GD/2	255/F	93	72	P
125	/86	19	20	13	0874	9	GD/3	?/?	99	62	P
126.17	/86	21	22	13	0875A	9	GD/3	?/?	99	53	P
126.18	/86	NA			0877	9	GD/3	0/E			
127.16	/86	23	24	13	0875B	9	GD/3	36/I	90	37	PS
127.18	/86	NA			0876	9	GD/3	42/E			
128	/86	25	26	13	0878	9	GD/3	51/E	3	26	0
129	/86	27	28	13	0879	9	GD/3	37/E	20	19	S
130	/86	29	30	13	0880	9	GD/2	14/E	37	35	PS
131	/86	31	32	13	0881	9	GD/2	0/E	54	46	PS
132	/86	33	34	13	0882	9	GD/2	0/E	71	39	S
133	/86	35	36	13	0883	9	GD/3	289/F	88	45	GS
134.17	/86	37	38	13	0884	9	GD/3	382/F	99	46	P
134.18	/86	NA			0885	9	GD/3	0/A			
135.07	/86	39	40	13	0887	9	GD/1.5	43/F	70	22	S
135.17	/86	41	42	13	0886	9	GD/3	?/?	99	51	P
135.18	/86	NA			0888	9	GD/3	0/E			
136.07	/86	43	44	13	0889	9	GD/1.5	100/F	83	30	PS
136.16	/86	45	46	13	0890	9	GD/3	232/I	99	62	PS
136.18	/86	NA			0891	9	GD/3	38/E			
137.06	/86	47	48	13	0892	9	GD/1	0/F	93	23	S
137.16	/86	49	50	13	0893	9	GD/2	90/J	68	53	PS
138	/86	51	52	13	0894	9	GD/3	0/E	14	34	P
139	/86	53	54	13	0895	9	GD/3	85/E	31	17	S
140	/86	55	56	13	0896	9	GD/3	146/E	48	29	S
141	/86	57	58	13	0897	9	GD/1.5	11/E	65	27	S
142	/86	59	60	13	0898	9	GD/3	156/F	82	37	P
143	/86	61	62	13	0899	9	GD/3	323/F	99	18	S
144	/86	63	64	13	0900	9	GD/3	?/?	99	52	P
145	/86	65	66	13	0901	9	GD/3	176/I	99	55	PS
146.16	/86	67	68	13	0902	9	GD/3	225/J	92	57	PS
146.18	/86	NA			0903	9	GD/3	43/E			
147.16	/86	69	70	13	0904	9	GD/2	137/K	46	89	GS

JUL day	YR	IR no.	VIS no.	Vol	IA#	Sat	Nav. Conf.	Nav. Acc.	%D	% clr	Qual.
147.18	/86	71	72	13	0905	9	GD/3	16/E	8	50	0
148	/86	73	74	13	0906	9	GD/3	0/E	25	63	P
149	/86	75	76	13	0907	9	GD/3	152/E	42	46	P
150	/86	NA			0908	9	GD/2	0/<E			
151	/86	77	78	13	0909	9	GD/2	108/F	76	60	P
152	/86	79	80	13	0910	9	GD/3	289/F	93	79	GP
153	/86	81	82	13	0911	9	GD/3	?/?	99	61	GP
154	/86	NA			0912	9	GD/2	27/E			
155	/86	NA			0913	9	GD/3	143/E			
156	/86	83	84	13	0914	9	GD/3	57/E	2	35	0
157	/86	85	86	13	0915	9	GD/3	42/E	19	23	S
158	/86	87	88	13	0916	9	GD/3	60/E	36	43	P
159	/86	89	90	13	0917	9	OK/1.5	77/I	52	57	PS
160	/86	91	92	13	0918	9	GD/3	0/F	70	6	S
161	/86	93	94	13	0919	9	GD/2	265/F	87	62	GP
162	/86	95	96	13	0920	9	GD/3	?/E	99	55	P
163	/86	NA					0921	9	GD/3	55/E	
164	/86	97	98	13	0922	9	GD/3	122/I	99	55	PS
165	/86	NA			0923	9	GD/1.5	0/E			
166	/86	99	100	13	0924	9	GD/3	57/E	12	43	S
167	/86	101	102	13	0926	9	GD/3	61/E	29	33	P
168	/86	103	104	13	0927	9	GD/3	?/?	47	56	P
169	/86	ND				NO	TAPE				
170	/86	105	106	13	0928	9	GD/1.5	97/F	80	70	P
171	/86	107	108	13	0929	9	GD/2	329/F	97	73	P
172.17	/86	NA			0930	9	GD/3	?/?	99	73	GP
172.18	/86	NA			0931	9	GD/3	25/E			
173	/86	111	112	13	0932	9	GD/3	?/?	99	70	GP
174	/86	NA			0933	9	GD/3	0/E			
175	/86	1	2	14	0934	9	GD/2	30/E	6	100	G
176	/86	3	4	14	0935	9	GD/3	0/E	23	79	P
177	/86	5	6	14	0936	9	GD/1.5	16/E	40	90	G
178	/86	7	8	14	0937	9	OK/1.5	0/E	57	89	P
179	/86	9	10	14	0938	9	OK/3	32/F	74	26	S
180	/86	NA			0939	9	OK/3	55/A			
181	/86	NA			0940	9	GD/3	8/A			
182	/86	NA			0941	9	GD/3	20/E			
183	/86	NA			0942	9	GD/2	41/E			
184	/86	11	12	14	0943	9	GD/3	55/E	0	60	0
185	/86	13	14	14	0944	9	GD/3	96/E	16	92	P
186	/86	15	16	14	0945	9	GD/3	226/E	33	66	P
187	/86	17	18	14	0946	9	GD/3	24/E	50	37	P
188	/86	19	20	14	0947	9	GD/2	0/E	67	37	P
189	/86	NA			0948	9	GD/3	0/A			
190	/86	21	22	14	0949	9	GD/3	?/?	99	68	P
191	/86	NA			0950	9	GD/3	0/A			
192	/86	NA			0951	9	GD/3	107/A			
193	/86	NA			0952	9	OK/3	0/E			
194	/86	23	24	14	0953	9	GD/3	0/E	10	56	P
195	/86	25	26	14	0954	9	GD/2	104/E	27	74	P
196	/86	27	28	14	0955	9	GD/2	19/E	44	90	G
197	/86	29	30	14	0956	9	GD/3	0/E	61	76	GP
198	/86	31	32	14	0957	9	GD/3	208/F	79	66	GP
199	/86	33	34	14	0958	9	GD/1	333/F	96	99	G?

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200	/86	NA			0959	9	GD/3	20/E			
201	/86	ND				NO	TAPE				
202	/86	NA			0960	9	GD/3	72/A			
203	/86	35	36	14	0961	9	GD/2	0/E	4	73	0
204	/86	37	38	14	0962	9	GD/3	39/E	22	87	P
205	/86	39	40	14	0963	9	GD/3	0/E	38	73	GP
206	/86	41	42	14	0964	9	OK/3	?/?	55	1	0
207	/86	43	44	14	0965	9	GD/3	14/F	73	66	P
208	/86	45	46	14	0966	9	GD/3	259/F	90	69	P
209	/86	47	48	14	0967	9	GD/3	?/?	99	78	GP
210	/86	49	50	14	0968	9	GD/3	228/I	99	73	P
211	/86	51	52	14	0969	9	GD/3	33/I	93	37	SP
212	/86	53	54	14	0970	9	GD/2	?/?	0	0	0
213	/86	55	56	14	0971	9	GD/3	48/H	16	68	P
214	/86	57	58	14	0972	9	GD/3	20/E	33	47	P
215	/86	59	60	14	0973	9	GD/1.5	97/F	51	69	P
216	/86	61	62	14	0974	9	GD/3	?/?	67	98	G
217	/86	63	64	14	0975	9	GD/3	188/F	84	24	P
218.17	/86	65	66	14	0976	9	GD/3	?/?	99	57	GP
218.18	/86	NA			0977	9	GD/2	62/A			
219	/86	NA			0978	9	GD/3	?/?			
220	/86	67	68	14	0979	9	GD/1.5	115/I	98	94	PG
221	/86	NA			0980	9	GD/3	0/E			
222	/86	69	70	14	0981	9	GD/2	113/E	12	55	P
223	/86	71	72	14	0982	9	GD/2	178/E	29	62	P
224	/86	73	74	14	0983	9	GD/3	282/E	46	81	P
225	/86	75	76	14	0984	9	GD/2	0/F	63	50	P
226	/86	77	78	14	0985	9	GD/3	132/F	80	70	GP
227	/86	79	80	14	0986	9	OK/3	327/F	97	74	P
228	/86	81	82	14	0987	9	OK/3	?/?	99	70	GP
229	/86	83	84	14	0988	9	GD/3	170/I	99	57	P
230	/86	85	86	14	0989	9	GD/3	130/I	93	83	GP
231	/86	87	88	14	0990	9	GD/3	0/E	7	98	G
232	/86	89	90	14	0991	9	GD/3	0/E	24	45	P
233	/86	91	92	14	0992	9	GD/2	43/E	41	22	P
234	/86	93	94	14	0993	9	GD/3	0/E	58	77	G
235	/86	95	96	14	0994	9	GD/3	?/?	75	66	P
236	/86	97	98	14	0995	9	OK/1.5	298/F	93	70	P
237	/86	99	100	14	0996	9	GD/3	?/?	99	64	P
238	/86	NA			0997	9	GD/3	17/E			
239	/86	101	102	14	0998	9	GD/3	?/?	96	57	PS
240.16	/86	103	104	14	0999	9	GD/3	60/J	48	71	P
240.18	/86	105	106	14	1000	9	GD/3	0/E	2	74	0
241	/86	107	108	14	1001	9	OK/3	55/E	19	60	P
242	/86	109	110	14	1002	9	OK/3	11/E	36	71	P
243	/86	111	112	14	1003	9	GD/2	15/F	54	72	GP
244	/86	1	2	15	1004	9	GD/2	0/F	71	91	P
245	/86	3	4	15	1005	9	GD/3	240/F	88	96	GP
246	/86	5	6	15	1006	9	GD/3	?/?	99	87	GP
247	/86	ND				NO	TAPE				
248	/86	NA			1007	9	GD/2	0/A			
249	/86	ND				NO	TAPE				
250	/86	7	8	15	1008	9	GD/3	250/A	14	66	P
251	/86	9	10	15	1009	9	GD/3	70/E	32	98	G

JUL day	YR	IR no.	VIS no.	Vol	IA#	Sat	Nav. Conf.	Nav. Acc.	%D	% clr	Qual.
252	/86	NA			1010	9	GD/1	?/E			
253	/86	11	12	15	1011	9	GD/3	62/F	66	57	P
254	/86	13	14	15	1012	9	PR/1.5	88/F	83	72	P
255	/86	15	16	15	1013	9	GD/3	?/F	99	64	P
256	/86	NA			1014	9	GD/1.5	0/A			
257.17	/86	17	18	15	1015	9	GD/2	97/K	99	84	PG
257.18	/86	NA			1016	9	GD/3	73/A			
258	/86	NA			1017	9	GD/3	30/A			
259	/86	19	20	15	1018	9	GD/3	0/E	10	92	P
260	/86	21	22	15	1019	9	GD/2	0/E	27	77	P
261	/86	23	24	15	1020	9	OK/2	26/E	44	13	S
262	/86	25	26	15	1021	9	GD/2	70/F	61	87	G
263	/86	27	28	15	1022	9	GD/3	138/F	78	42	P
264	/86	29	30	15	1023	9	GD/3	335/F	95	47	P
265	/86	31	32	15	1024	9	GD/3	?/F	99	46	P
266	/86	ND				NO	TAPE				
267	/86	33	34	15	1025	9	GD/1.5	0/K	87	64	P
268	/86	35	36	15	1026	9	GD/2	259/A	4	42	0
269	/86	37	38	15	1027	9	GD/3	155/E	21	45	S
270	/86	39	40	15	1028	9	GD/1.5	110/I	38	51	P
271	/86	41	42	15	1029	9	GD/3	?/A	56	54	P
272	/86	43	44	15	1030	9	GD/3	148/F	73	54	P
273	/86	45	46	15	1031	9	GD/1.5	190/F	90	85	S
274	/86	NA			1032	9	GD/3	246/E			
275	/86	NA			1033	9	GD/3	?/?			
276	/86	47	48	15	1034	9	GD/1.5	?/?	99	53	P
277	/86	49	50	15	1035	9	GD/2	202/E	0	0	0
278	/86	51	52	15	1036	9	GD/2	115/E	15	35	P
279	/86	53	54	15	1037	9	GD/3	260/F	32	57	P
280	/86	NA			1038	9	GD/2	95/A			
281	/86	55	56	15	1039	9	GD/1.5	0/F	67	62	S
282	/86	57	58	15	1040	9	GD/2	136/F	84	53	PS
283	/86	NA			1041	9	GD/3	248/E			
284	/86	NA			1042	9	GD/2	0/E			
285	/86	NA			1043	9	GD/2	108/A			
286	/86	59	60	15	1044	9	GD/1.5	114/I	85	50	S
287	/86	61	62	15	1045	9	GD/2	67/E	10	88	P
288	/86	63	64	15	1046	9	GD/2	35/E	26	6	0
289	/86	65	66	15	1047	9	GD/3	136/E	43	77	P
290	/86	67	68	15	1048	9	GD/1	0/E	61	38	PS
291	/86	69	70	15	1049	9	GD/3	240/I	78	45	GP
292	/86	71	72	15	1050	9	GD/3	322/F	95	42	PS
293.17	/86	73	74	15	1051	9	GD/3	?/?	99	20	PS
293.19	/86	NA			1052	9	GD/3	0/A			
294	/86	75	76	15	1053	9	GD/3	176/I	99	62	S
295	/86	NA			1054	9	GD/2	0/E			
296	/86	77	78	15	1055	9	GD/3	?/?	4	41	0
297	/86	79	80	15	1056	9	GD/2	170/E	21	11	0
298	/86	81	82	15	1057	9	GD/3	217/E	38	23	P
299	/86	83	84	15	1058	9	GD/1.5	73/F	55	29	S
300	/86	85	86	15	1059	9	GD/1.5	0/F	72	35	PS
301	/86	87	88	15	1060	9	GD/1.5	292/E	88	5	S
302	/86	NA			1061	9	GD/3	18/A			
303	/86	NA			1062	9	GD/3	195/A			

JUL day	YR	IR no.	VIS no.	Vol	IA#	Sat	Nav. Conf.	Nav. Acc.	%D	% clr	Qual.
304	/86	NA			1063	9	GD/3	0/E			
305	/86	NA			1064	9	GD/3	34/A			
306	/86	89	90	15	1065	9	GD/1.5	149/E	14	29	P
307	/86	91	92	15	1066	9	GD/3	96/E	31	4	0
308	/86	93	94	15	1067	9	GD/3	62/I	48	62	P
309	/86	95	96	15	1068	9	OK/3	18/F	65	13	P
310	/86	97	98	15	1069	9	GD/1.5	147/F	83	42	P
311	/86	NA			1070	9	GD/2	284/E			
312	/86	99	100	15	1071	9	GD/3	?/?	99	27	S
313	/86	101	102	15	1072	9	GD/1	145/I	99	49	PS
314	/86	NA			1073	9	GD/3	0/E			
315	/86	103	104	15	1074	9	GD/2	203/E	9	4	0
316	/86	105	106	15	1075	9	GD/3	82/E	26	6	S
317	/86	107	108	15	1076	9	GD/1.5	0/E	42	31	PS
318	/86	109	110	15	1077	9	GD/3	28/E	59	3	S
319	/86	111	112	15	1078	9	GD/3	158/F	76	30	PS
320	/86	1	2	16	1079	9	GD/3	?/?	93	32	PS
321	/86	3	4	16	1080	9	GD/3	?/?	99	10	PS
322	/86	NA			1081	9	GD/3	31/E			
323	/86	5	6	16	1082	9	GD/3	25/I	86	43	P
324	/86	7	8	16	1083	9	GD/3	0/E	3	16	0
325	/86	9	10	16	1084	9	GD/3	90/H	20	4	S
326	/86	11	12	16	1085	9	GD/3	74/I	37	7	S
327	/86	13	14	16	1086	9	GD/3	35/F	54	22	P
328	/86	15	16	16	1087	9	GD/3	?/?	71	36	PS
329	/86	17	18	16	1088	9	GD/3	310/F	88	3	S
330	/86	19	20	16	1089	9	GD/3	?/?	99	32	P
331	/86	NA			1090	9	GD/3	40/E			
332	/86	NA			1091	9	GD/3	?/?			
333	/86	NA			1092	9	GD/3	?/?			
334	/86	21	22	16	1093	9	GD/2	127/E	15	21	S
335	/86	ND				NO	TAPE				
336	/86	23	24	16	1094	9	GD/2	0/F	49	29	S
337	/86	25	26	16	1095	9	GD/1.5	0/F	66	38	PS
338	/86	27	28	16	1096	9	OK/3	440/F	83	31	P
339	/86	NA			1097	9	GD/3	0/A			
340	/86	NA			1098	9	GD/3	139/A			
341	/86	NA			1099	9	GD/3	0/A			
342	/86	NA			1100	9	GD/3	0/E			
343	/86	29	30	16	1101	9	GD/3	0/E	10	6	0
344	/86	31	32	16	1102	9	GD/3	17/H	27	7	S
345	/86	33	34	16	1103	9	GD/3	117/F	45	10	S
346	/86	35	36	16	1104	9	OK/3	76/F	62	24	P
347	/86	37	38	16	1105	9	GD/3	180/F	79	6	S
348	/86	39	40	16	1106	9	GD/3	328/F	96	24	S
349	/86	41	42	16	1107	9	GD/1.5	?/?	99	32	PS
350	/86	NA			1108	9	GD/3	50/E			
351	/86	NA			1109	9	GD/3	0/E			
352	/86	43	44	16	1110	9	GD/3	?/?	45	31	PS
353	/86	45	46	16	1111	9	GD/3	112/H	23	12	P
354	/86	47	48	16	1112	9	GD/1.5	14/I	41	54	G
355	/86	49	50	16	1113	9	OK/3	0/F	58	54	P
356	/86	51	52	16	1114	9	GD/3	131/F	75	44	P
357	/86	53	54	16	1115	9	PR/3	269/F	92	10	P

JUL day	YR	IR no.	VIS no.	Vol	IA#	Sat	Nav. Conf.	Nav. Acc.	%D	% clr	Qual.
358	/86	NA			1116	9	OK/3	174/E			
359	/86	55	56	16	1117	9	GD/3	337/I	99	23	P
360	/86	NA			1118	9	GD/3	?/?			
361	/86	57	58	16	1119	9	GD/3	74/E	2	10	0
362	/86	59	60	16	1120	9	GD/3	0/E	19	18	PS
363	/86	61	62	16	1121	9	GD/3	207/E	36	12	S
364	/86	63	64	16	1122	9	GD/2	16/F	54	16	S
365	/86	65	66	16	1123	9	GD/3	57/F	71	55	P